Phong Do

To:

bill.eisma@power.alstom.com; kevin.spires@power.alstom.com

Date:

1/17/03 9:24AM

Subject:

Balance Weights

Kevin,

Please confirm that the required field balance weights were shipped along with the Unit 1 rotor.

Last year, the Unit 2 HP rotor was shipped with the following balance weights:

- a. 3 each 15 grams and 50 grams.
- b. 3 each 16 grams and 60 grams.
- c. 3 each 24 grams.
- d. 4 each 80 grams
- e. 10 each small round weights

Thanks.

CC:

Aaron Nissen; James Nelson

From: James Nelson

To: Aaron Nissen; Garry Christensen; Phong Do

Date: 8/8/02 10:57AM

Subject: Fwd: Intermountain 1 & 2 - HP Swallowing Capacity

This is only a slight variation of what Bob stated on the phone, not a meaningful change or reconciliation of our recorded MW output. Have not heard back yet from Adrian regarding the possibility of a forced meeting of the minds or greater reductions on Unit 1.

	* * * * * 1	inioming	V V V O	mounty	8 8 8 9	HIPUMING	***	HIIOMING	* * * * *	11112411113	* * * * *	1	
5.1	5.6	5.2	6.3	5.2	5.3	5.2	5.5	5.2	5.2	5.2	5.3	5.2	5,2
12.2 1	13.4	12.2	15.0 🥒	12.2	12.6	12.2	13.0 🥒	12.2	12.4	12.2	12.6	12.2	12.2
2 111111142.21	46.3	42.3	52.1	42.3	43.6	42.2	45.0	42.2	42.9	42.2	43.6	42.2	42.4
5 世界70.7集	77 #	70.7	87 🎉	70.7	73 🖋	70.6	75 ,	70.7	71,8	70.7	72	70.7	70
0 135,1	148.3	135.0		135.0	130.5	135.0	148.9	135.0	13/7.2	135.0	136.4	135.0	136.5
8 137.2		137.2		137.2		137.2		137.2		137.2		137.2	4 7
1 257.6	282.5	256.8	∦ O/S	O/S	2 65.9	257.2	274.3	256.9	261.7	257.5	265.8	257.3	258.4
7 1 615.2	663.2	602.2	/ O/S	O/S	635.7	614.4	656.2	614.0	625.3	615.0	/ 0/S	O/S	604.7
5 10844 📝	1134.6	1028.3	O/S	O/S	1124.2	1085.2	/ 0/S	O/S	1065.1	1047.3	1012.4	980.6	1076.6

Comparison of flow/ power output/ heat added with HP heaters isolated

F TS29247	One Heater S	String Isolated	Top 6 Heat	ters Isolated	One Top He	eater isolated	Both top hea	aters isolated	One HP 7 h	eater isolated	Both HP 7 he	eaters isolated	One HP 6 h
VWO ∰	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO
6.9000 7.4	6.805	6.138	6.666	5.338	6.825	6.576	6.747	6.285	6.937	6.810	6.973	6.725	6.914
2 973 E	1019	923	1084	870	991	956 300 300 300 300 300	1009	942 Wallett	979	962	985	952	972
76833	7,521	7880	7,894	8106	7/20	7743	7 54	7797	7/16	7728	7/46	7769	7596
0.04 (datum)	6.5	-2.8	15.9	-5.6	2.3	-1.0	4.6	-1.7	1.0	-0.6	2.1	-1.1	0.1

Flow through each exhaust of LP turbine

um 5202474	One Heater S	tring Isolated	Top 6 Heat	ers Isolated	One Top He	ater isolated	Both top hea	aters isolated	One HP 7 he	eater isolated	Both HP 7 he	aters isolated	One HP 6 h
ible //wo	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO	Throttling	VWO
46.6 Z.W.1	733721	671174	820963	669988	693490	672153	714632	672287	682632	672296	692864	672151	673110
0 = #12000	13196	12071	14766	12050	12473	12089	12853	12091	12278	12092	12462	12089	12106

IP7008198

<bill.eisma@power.alstom.com>

To:

<jim-n@ipsc.com>
5/10/02 8:43AM

Date:

Subject:

1350030. Delta 1 - Intermountain 1 Monthly progress report (Issued

10th May2002)

James,

Attached for your information and records is the updated progress report for Delta unit 1

(See attached file: Intermountain 1 HP retrofit progress - Issued 10th May '02.doc) (See attached file: W217Int 1 Proj.pdf)

Sincerely,

Bill Eisma

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

CC:

<phong-d@ipsc.com>

<bill.eisma@power.alstom.com>

To:

<jim-n@ipsc.com>, <phong-d@ipsc.com>

Date:

5/2/02 11:45AM

Subject:

A.0082E: Intermountain 1 HP Rotor forging (for interest)

Gentlemen,

Attached for your information is a picture of the rotor forging for unit 1. The forging is now at our Rugby works available for machining.

Regards,

Bill Eisma

(See attached file: Intermountain 1 HP Rotor forging P4300002a.jpg)

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

<bill.eisma@power.alstom.com>

To:

<phong-d@ipsc.com>
5/16/02 10:02AM

Date:

Subject:

A.0085E - Intermountain 1 - HP Inner cylinder casing

Phong,

Please find attached for your information some photo's showing the progress on the inner casing

The casing (PO 302894) was programmed to arrive at Rugby site, from Zamec in Poland, week 0220.

(See attached file: P5150007.jpg) (See attached file: P5150008.jpg) (See attached file: P5150013.jpg) (See attached file: P5150011.jpg)

Best regards Bill

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

CC:

<jim-n@ipsc.com>

PROGRESS REPORT

αβγδ

Power Steam Turbines

Project:

Intermountain Unit 1 & 2

Project Manager:

Kevin Spires

Department:

STRGP

Progress Report Number:

Issued Date:

August 13th 2002

Customer Purchase Order No.:

01 - 45510

ALSTOM Power USA, Inc P.O No.: 1350030

STR Order Number:

R0529/01 (Unit 2) & R0529/02 (Unit 1)

Circulation:

STRG

Mr. K. Spires

STRGE

Mr. R. Cunningham

USA

Mr. B. Eisma

IPSC

Mr. J. Nelson

ALSTOM Power Ltd Newbold Road Rugby, Warwickshire CV21 2NH England Tel.: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700 www.alstom.com

Registered Office: Newbold Road Rugby, Warwickshire CV21 2NH Registered in England No. 4347573

Power Steam Turbines

PROGRESS REPORT

Page: 2 of 5

Date: 13th August 2002

PM : K. Spires

Department: STRG P

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Page	4	3.1.1	Engineering for Rotating parts
Page	4	3.1.2	Engineering for Stationary parts
Page	4	3.1.3	Manufacturing of Rotating parts
Page	4	3.1.4.	Manufacturing of Stationary parts
Page	4	3.2	Any Other parts
Page	4	3.2.1	Engineering for any other parts
Page	4	3.2.2	Manufacturing of any other parts
Page	5	3.3	Installation
Page	5	3.4	Quality Assurance
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Page	5	3.5	Personnel
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Power

Steam Turbines

PROGRESS REPORT

Page: 3 of 5

Date: 13th August 2002

PM: K. Spires

Department: STRG P

1. SUMMARY OF PROJECT

This is the Progress / Status Report covering the activities regarding the retrofit of the two (2) turbines unit # 1 & 2 in the Intermountain Power Plant. For the retrofit, a new steam path for the HP Turbine will be designed and implemented in both turbines Intermountain unit # 1 &2 (unit 2 being first). New HP Rotors and Inner Cylinders will be manufactured and installed.

Each turbine retrofit consists of:

- Design and supply of HP rotor with 8 stages of rotating blading,
- Design and supply of fixed blade diaphragms (8 stages in total),
- Design and supply of HP Inner Cylinder,
- Design and supply of balance gland casing and sealing rings (for inlet end),
- Design and supply of stellited inlet liner assemblies (fitted into existing outer casing),
- Design and supply of miscellaneous shims and packing pieces, etc.,
- High speed balancing of the new rotor assembly,
- HP Heater Connection Assembly
- Transportation Cradle for assembled inner cylinder module complete with rotor.
- Technical Support for the installation of the new components,
- Design and supply of special tools or lifting equipment that differ from those required for the existing equipment,
- Supply of Heat Balance Diagrams, etc.
- Witness of post upgrade performance tests.
- Certification, QA documentation, modifications to service manuals, installation & maintenance drawings.

This report covers the period from 1st July 2002 – 31st July 2002

Unit #2: All items delivered, installed and unit back in service

Unit #1: All items on schedule

2. LIST OF DELAYS

COMPONENT

ACTIONS

No Delays

PowerSteam Turbines

PROGRESS REPORT

Page: 4 of 5

Date: 13th August 2002

PM: K. Spires

Department: STRG P

3. ACTUAL STATUS

3.1. Turbine Parts

3.1.1 Engineering for Rotating parts

All Complete

3.1.2 Engineering for Stationary parts

All Complete.

3.1.3 Manufacturing of Rotating parts

Unit 1 HP Rotor is finish machined and ready for blade assembly which is due to commence in week 37.

HP Moving Blades - due to be completed week 37

3.1.4. Manufacturing of Stationary parts

Unit 1 components

HP Inner Cylinder – machining in progress due to complete week 38

HP Cylinder Bolting – machining due to be completed week 32

HP Inlets - complete

HP Inlet Gland - machining ongoing due to complete week 33

Gland Bolting - complete

HP Shaft Gland Rings - complete

HP Diaphragms - material available, due to commence first week 36

HP Fixed Blades - manufacture ongoing, due to complete last week 36

HP Diaphragm Gland Rings - due to be completed week 34

3.2 Any Other Parts

3.2.1 Engineering for any other parts

Completed

3.2.2 Manufacturing of any other parts

Heater Connection Materials - all available

Power

Steam Turbines

PROGRESS REPORT

Page: 5 of 5

Date: 13th August 2002

PM: K. Spires

Department: STRG P

3.3 Installation

None

3.4 Quality Assurance

Nothing to report.

3.5 Personnel

Kevin Spires has replaced Adrian Bramley as Project Manager for STR in Rugby for the remainder of the contract.

3.6 Upcoming Highlights

None.

4. ADDITIONAL TOPICS

Extra design work carried out to evaluate what happens if HP Heaters are out of service. IPSC have agreed to fund this at a total cost of \$4,250.

For Unit 1 the HP Fixed Blades on Stages 1 & 6 will be modified to reduce flow by 1% as agreed with IPSC. This has no effect on the programme.

5. LIST OF ATTACHMENTS

Unit 1 Programme with Milestone dates

6. ABBREVIATIONS

AP

ALSTOM Power

HP

High Pressure



INVOICE

SOLD TO :Intermountain Power Service Corp.

850 W. Brush Wellman Road DELTA, UTAH 84624-9546

Attn.: Ms. Sheila Bronson. Accounting

SHIP TO: Intermountain Power Service Corp.

Delta, Utah

Delta Power Plant

WIRE TO:

REMIT TO:

Bank One, NA 1 Bank One Plaza

CHICAGO, IL 60670 ABA # 071000013 **ACCOUNT # 5709636**

ALSTOM PGI

P.O. BOX 70586

CHICAGO, IL. 60673

NETTING CODE: USPGE

CUSTOMER #: 314870 CUSTOMER P.O. #: 01-45510

CHANGE ORDER #:

INVOICE #: 51483

INVOICE DATE: 10/21/2002 ALSTOM JOB #: 1350030

DESCRIPTION

TOTAL PRICE

To be approved by Mr. Phong Do

This invoice is for the 3 rd. milestone for unit 1. Payment due on completion of rotor blading. Photo's submitted 10/21/02.

Payment due 20% of \$4,170,000.00=

\$834,000.00

Unit 2

Unit 1

Contract Value:

\$5,245,000.00

\$4,170,000.00

Previously Invoiced:

\$5,245,000.00

\$1,668,000.00

This Invoice: Total Invoiced: 0.00 \$5,245,000.00

\$834,000.00 \$2,502,000.00

PAYMENT TERMS:

100% net 30 days.

INVOICE TOTAL:

\$834,000.00

ANY QUESTIONS, PLEASE CONTACT:

Wim F.Eisma

TEL: #: (804)-763-7715

Fax. #: (804)-763-3818

ALSTOM power Inc.

Steam Turbine Segment Retrofit Project Execution 2800 Waterfordlake Drive Midlothian, VA 23112

Telephone: (804) 763-7000

Delta 1+2, Intermountain Power Service Corp. Invoice/Payment Schedule

Paymnt.	Date/Event	Payment	Invoice	Invoice	lnv.	Due	Rec'd.	Days	LPI	TOTAL
#	due	due	Amount	#	Date	Date	Date	Late	1.5%/Mnth.	INVOICED
	Delta # 2 PAYMENTS			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		-6110V6011011111111111111111111111111111				
D2/01	HP forging order(5/01)	20%	\$1,049,000.00	38449	05/02/01	06/01/01	06/04/01	3	\$17,308.50	
D2/02	Start rotor machining (8/01)	20%	\$1,049,000.00	40758	08/14/01	09/13/01	09/12/01	-1		
D2/03	Complete blading (12/01)	20%	\$1,049,000.00		01/15/02			-13		
D2/04	Complete rotor testing (1/02)	20%	\$1,049,000.00	44779	01/29/02	02/28/02	02/20/02	-8		
D2/05	Equipm. On Site (3/02)	10%	\$524,500.00	45337	02/21/02	03/23/02	04/17/02	25	\$14,423.75	
D2/06	1st. Synchr. (net 60 days)	10%	\$524,500.00	46593	04/05/02	06/04/02	06/14/02	10	\$2,622.50	
	Total Delta unit 2		\$5,245,000.00							
	Total Late Payment Int. due								\$34,354.75	
	Total Invoiced unit 2									\$5,245,000.00
	Total Remaining unit 2									0.00
	Changes									
	Heaters out of service study	100%	\$4,250.00	50055	08/27/02	09/26/02	10/15/02	18	\$38.25	
	Performance Bonus unit 2	100%	\$90,000.00	50056	08/27/02	09/26/02	10/01/02	4	\$153.06	
	Deduct for Contr. Rotor corr.	100%	(\$13,472.00)	50056	08/27/02	09/26/02	10/01/02			
	Delta # 1 Payments									
D1/01	HP forging order (5/02)	20%	\$834,000.00	43360	11/28/01	12/28/02	12/21/01	-7		
D1/02	Start rotor machining (9/02)	20%	\$834,000.00	47931	05/29/02	07/01/02	07/19/02	18	\$7,506.00	
D1/03	Complete blading (11/02)	20%	\$834,000.00	51483	10/21/02	11/20/02				
D1/04	Complete rotor testing (12/02)	20%	\$834,000.00							
D1/05	Equipm. On Site (3/03)	10%	\$417,000.00							
D1/06	1st. Synchr.(net 60 days)	10%	\$417,000.00							
	Total Delta unit 1		\$4,170,000.00			-				
	Total Late Payment Int. due									
	Total Invoiced unit 1									2,502,000.00
	Total Remaining unit 1					·				1,668,000.00
L	I		·			*********************		***************************************		aptidanialanifetidatkii daniaanidanidanidanidanidanidanidani

LPI. Late Pay Interest. 1.5%/Mnth.

1.50%

Original Contract Value

Unit 2 \$5,245,000.00 Unit 1 \$4,170,000.00

Adder for heater study \$4,250.00 Adder for perf. Bonus unit 2 \$90,000.00

Deduct for Contr. Rotor Correct. -\$13,472.00

Revised Total \$9,495,778.00





Technofast International
12 Archimedes Street
Darra
Brisbane 4076
Queensland
Australia
Tel: +61 73 375 1431

Fax: +61 73 375 9094

Email: sales@technofast.com
Web: www.technofast.com

REFERENCE LIST - OEM & POWER GENERATION

OEM's

Mitsubishi Electric

Toshiba Kawasaki Hyundai Samsung Hitachi

Bellelli Alfa Laval

Kelly and Lewis Fiat

Favelle Favco Danieli

ANI Svedala Sulzer Generator Core Bolting

Reactor Feed Pump Turbine Vibration Units and Presses Dock Crane Cablewinders Dock Crane Cablewinders Injection Clamping Equipment

Heat Exchangers
Heat Exchangers

Pumps Presses Cranes Presses

Crushers / Mills Mills / Screens Boiler Feed Pumps

POWER GENERATION

Tarong Energy Mitsubishi Electric

AES

Toshiba Pacific Power Delta Energy Virginia Power

Maquarie Generation

Alstom

Stanwell Corporation

CS Energy Iberdrola

Westinghouse Electric

Dominion Power

KOSPO

Generator Winding Jacks
Generator Rotor Core Bolting

Boiler Feed Pumps

Reactor Feed Pump Turbines Boiler Feed Pump Suction HP Heater Manway Doors Westinghouse Steam Valves

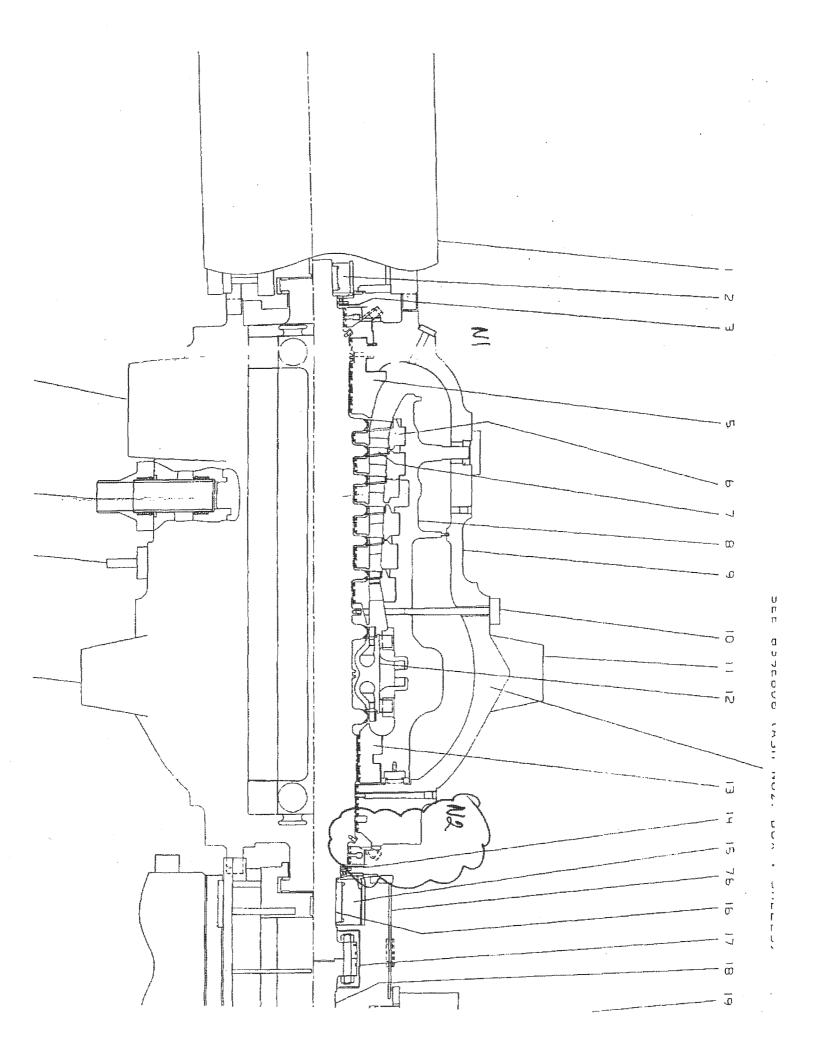
Shaft Raising Gear Coupling Hole Boring Boiler Sling Rod Analysis

Turbine Casings
GE Turbine Casings

Reactor Pressure Vessel Covers

Reactor Coolant Pumps
Gas Turbine Casings

In addition to this, Technofast Hydraulic Bolting systems have been used with great success over the past fourteen years within the Mining, Steel, Oil and Gas, Refining and Civil industries, details of which can be provided upon request.



Phong Do

To:

Alan.holmes@power.alstom.com; kevin.spires@power.alstom.com

Date:

10/16/02 1:51PM

Subject:

HP Rotor End Balance

Dear Alan/Kevin,

One of the Unit 2 HP retrofit startup major concerns was the offset between the rotor-N2-End Balance Hole Center and the N2 Casing Access Hole Centers. The center lines of the N2 casing holes were about 1/2" to 3/4" off (lower) relative to the N2 rotor hole's center lines. The N1 center lines were lined up good.

After some failures, our performance group finally created some flexible tools and was able to install the end balance weights. This process took a significant bite out of the startup time.

Please provide recommendations to correct the above concern.

Thanks.

Phong Do

Day Phone: (435)864-6475

Fax: (435)864-0775

Email: Phong-D@IPSC.Com

cc: bill.eisma@power.alstom.com; James Nelson

Bill Eisma, Project Director Alstom Power, Inc. 2800 Waterford Lake Drive. Midlothian, VA. 23112 **USA**

15th July 2002

ALSTOM Power USA, Inc Ref: 1350030

01-45510

Rugby Works Order Ref:

760R0529/02/001/001

Manufacturing Works:

Rugby

Power Station Name:

Intermountain Unit 1

Project Manager:

Leigh Thornton

MONTHLY CONTRACT STATUS REPORT

PLANT:

Intermountain 1 HP Retrofit for IPSC

Your Purchase Order Number: 100318 OG.

COMMITMENT: HP Inner Assembly + Rotor - Week 0309 (28th February 2003 - on site)

FORECAST:

HP Inner Assembly + Rotor - Week 0303 (17th January 2003 - on site)

Current Status

This report details progress up to 15th July 2002.

See attached programme for details.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700 ALSTOM Power UK Ltd. Registered Office: Lindum House 11 Sewell Road, Lincoln LN2 5RY Registered in England No. 476835

Engineering

All complete.

Salient Material

<u>Item</u>	HP Status
HP Inner Cylinder	Order placed (PO 302894) purchased from Zamec in Poland,
Casing	Casting complete week 0220.
	Machining forecast complete week 0233 (to be machined in-
	house).
Rotor	Forging purchase order (PO 300946) placed on Saarschmiede in Germany.
	Forging complete.
	Pre blade machining commenced
	Overspeed week 0242.
Diaphragms	Diaphragms forecast complete week 0242 to 0245.
	Last material to Tees Components (for roughing out). Complete.
Fixed Blades	Materials on stock.
	Completion due for weeks 0233 to 0236.
Moving Blades	Material on order (PO 304787) from Corus for stages
	1,3,4,5,6,7&8. Material received.
	Stage 2 material from stock.
	Forecast completion date weeks 0234 to 0237.
Bolting, cylinder nimonic	Material order placed on Enpar due in week 0213 (PO 303083).
	Received. Paperwork cleared.
	Complete.
Bolting, gland	Complete.
Heater connection	Seal ring carrier forging (PO 305310).
materials	Received. Machined complete.
*	•
	Retaining nut forging (PO 304912)
	Received. Machined complete.
	10" NS Pipe (PO 305860) on Eurotube. Received. Order placed
	on Grevilles (PO 3-6430) for Stelliting. Complete.
	Piston rings (PO 303807). Received.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power UK Ltd. Registered Office: Lindum House 11 Sewell Road, Lincoln LN2 SRY Registered in England No. 476835

<u>Item</u>	HP Status
Inlet Materials	Liners ordered on Grevilles due week 0201.
	All other materials received.
	Machining order placed on MGM.
	Complete.
Rotor Cooling Assembly	Liner ring and seal ring carrier - all complete.
	Flange pipe (PO 304702).
	Received. All complete.
	Piston rings ordered on Cross Mfg. Received.
Diaphragm Gland Rings	Due for completion at week 0230.
	Currently at TurboCare in the USA.
Shaft Gland Rings.	Material due in from Firth Rixon (PO 306208 #3) week 0150.
	Received.
	Complete.
Inlet Gland Box	Order placed on Innosman (PO 306054).
	Received.
	Forecast machined complete week 0234.
Gland box deflector	Order placed on Innosman (PO 306054)
	Received.
	Forecast machined complete week 0233.
Lifting gear	Received.
Shipping frame	Order number (PO 305656 #1). Received.
Bolt measuring gear	N/A
Instrumentation.	Site purchase.
Outer shell interface	Raw material for the diffuser, connection sleeve, shear ring and
details	retaining ring.
	Received. All clear.
*** Company of the second	Machining order placed on Nansons PO 307919. Requested week 0232.

Possible Risks

Best regards,

Leigh Thornton.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

Bill Eisma, Project Director Alstom Power, Inc. 2800 Waterford Lake Drive, Midlothian, VA, 23112 USA

12th June 2002

ALSTOM Power USA, Inc Ref: 1350030

IPSC Ref:

01-45510

Rugby Works Order Ref:

760R0529/02/001/001

Manufacturing Works:

Rugby

Power Station Name:

Intermountain Unit 1

Project Manager:

Leigh Thornton

MONTHLY CONTRACT STATUS REPORT

PLANT:

Intermountain 1 HP Retrofit for IPSC

Your Purchase Order Number: 100318 OG.

COMMITMENT:

HP Inner Assembly + Rotor - Week 0309 (28th February 2003 - on site)

FORECAST:

HP Inner Assembly + Rotor - Week 0303 (17th January 2003 - on site)

Current Status

This report details progress up to 12th June 2002.

7See attached programme for details.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700 ALSTOM Power UK Ltd.
Registered Office:
Lindum House
11 Sewell Road, Lincoln
LN2 SRY
Registered in England No. 476835

Engineering

All complete.

Salient Material

<u>Item</u>	HP Status
HP Inner Cylinder Casing	Order placed (PO 302894) purchased from Zamec in Poland, Casting forecast complete week 0220. Machining forecast complete week 0233 (to be machined inhouse).
Rotor	Forging purchase order (PO 300946) placed on Saarschmiede in Germany. Forging forecast completed. Overspeed week 0241.
Diaphragms	Diaphragms forecast complete week 0242 to 0245. Last material to Tees Components (for roughing out). Complete.
Fixed Blades	Materials on stock. Completion due for weeks 0233 to 0236.
Moving Blades	Material on order (PO 304787) from Corus for stages 1,3,4,5,6,7&8. Material received. Stage 2 material from stock. Forecast completion date weeks 0229 to 0232.
Bolting, cylinder nimonic	Material order placed on Enpar due in week 0213 (PO 303083). Received. Paperwork cleared. Forecast machined complete by week 0229.
Bolting, gland	Complete.
Heater connection materials	Seal ring carrier forging (PO 305310). Received. Machined complete. Retaining nut forging (PO 304912) Received. Machined complete.
	10" NS Pipe (PO 305860) on Eurotube. Received. Order placed on Grevilles (PO 3-6430) for Stelliting. Complete. Piston rings (PO 303807). Received.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700 ALSTOM Power UK Ltd. Registered Office: Lindum House 11 Sewell Road, Lincoln LN2 SRY Registered in England No. 476835

<u>Item</u>	HP Status
Inlet Materials	Liners ordered on Grevilles due week 0201. All other materials received. Machining order placed on MGM.
	Complete.
Rotor Cooling Assembly	Liner ring and seal ring carrier - all complete.
	Flange pipe (PO 304702).
	Received. All complete.
	Piston rings ordered on Cross Mfg. Received.
Diaphragm Gland Rings	Due for completion at week 0230.
Shaft Gland Rings.	Material due in from Firth Rixon (PO 306208 #3) week 0150. Received.
Labet Observat Des	Due for completion at week 0225.
Inlet Gland Box	Order placed on Innosman (PO 306054). Received.
	Forecast machined complete week 0233.
Gland box deflector	Order placed on Innosman (PO 306054) Received.
	Forecast machined complete week 0233.
Lifting gear	Received.
Shipping frame	Order number (PO 305656 #1). Received.
Bolt measuring gear	N/A
Instrumentation.	Site purchase.
Outer shell interface details	Raw material for the diffuser, connection sleeve, shear ring and retaining ring.
dotailo	Received. All clear.
	Machining order placed on Nansons PO 307919. Requested week 0232.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power UK Ltd.
Registered Office:
Lindum House
11 Sewell Road, Lincoln
LN2 5RY
Registered in England No. 476835

Possible Risks

During the past month our factory has been re-scheduling the workload it currently has. The result of this re-scheduling has moved the ex-works date to 20th December 2002.

However, the retrofit is still early to requirement dates.

Best regards,

Leigh Thornton.

$ABX\Delta$

INTERMOUNTAIN NOTIFICATION OF INSPECTION

To:- James Nelson/Phong Do

From :- Gary Randle

IPSC

Project Support Group

RUGBY

FAX No.: 00 1 435 864 6670 TEL. No.: 00 1 435 864 6464

FAX No.:- 00 44 1788 531281 TEL. No.:- 00 44 1788 531957

Notification Reference: Int 004

DATE 10/10/2002

We confirm that the equipment detailed below is ready for inspection In line the Contract.

EQUIPMENT DETAILS

Equipment Description

: HP ROTOR

Alstom Power (UK) Ltd. PO No. :

Type of Inspection and Test

: Overspeed test

COMPANY DETAILS

Company

: Alstom Power Ltd.

Inspection Location

: Willans Works

Rugby UK

Inspection Date / Time

: Wednesday 20th November 2002

Contact

: Gary Randle

TEL No. / FAX No.

: 00 44 1788 531957/00 44 1788 531281

Additional Information

BUYER/SQR/OWNERS RESPONSE

Please confirm the receipt of the notification and advise whether the your representative will/will not * attend the inspection detailed (* delete as applicable).

Please return to Fax No. +44 (0) 1788 531281 or e-mail to gary.randie@power.alstom.com

SIGNED:-

DATE:-

Bill Eisma, Project Director Alstom Power, Inc. 2800 Waterford Lake Drive. Midlothian, VA, 23112 USA

10th May 2002

ALSTOM Power USA, Inc Ref: 1350030 IPSC Ref: 01-45510

Rugby Works Order Ref:

760R0529/02/001/001

Manufacturing Works:

Rugby

Power Station Name:

Intermountain Unit 1

Project Manager:

Leigh Thornton

MONTHLY CONTRACT STATUS REPORT

PLANT:

Intermountain 1 HP Retrofit for IPSC

Your Purchase Order Number: 100318 OG.

COMMITMENT: HP Inner Assembly + Rotor - Week 0309 (28th February 2003 - on site)

FORECAST:

HP Inner Assembly + Rotor - Week 0247 (22nd November 2002 - on site)

Current Status

This report details progress up to 10th May 2002.

See attached programme for details.

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Engineering

All complete.

Salient Material

<u>Item</u>	HP Status
HP Inner Cylinder	Order placed (PO 302894) purchased from Zamec in Poland,
Casing	Casting forecast complete week 0220.
	Machining forecast complete week 0233 (to be machined in-
	house).
Rotor	Forging purchase order (PO 300946) placed on Saarschmiede in
	Germany.
	Forging forecast completed.
	Overspeed week 0239.
Diaphragms	Diaphragms forecast complete week 0235 to 0236.
	Last material to Tees Components (for roughing out). Complete.
Fixed Blades	Materials on stock.
	Completion due for weeks 0224 to 0227.
Moving Blades	Material on order (PO 304787) from Corus for stages
	1,3,4,5,6,7&8. Material received.
	Stage 2 material from stock.
	Forecast completion date weeks 0229 to 0232.
Bolting	Material order placed on Enpar due in week 0213 (PO 303083).
	Received. Paperwork to clear.
	Forecast machined complete by week 0229.
Heater connection	Seal ring carrier forging (PO 305310).
materials	Received. Machined complete.
	Retaining nut forging (PO 304912)
	Received. Machined complete.
	10" NS Pipe (PO 305860) on Eurotube. Received. Order placed
	on Grevilles (PO 3-6430) for Stelliting. Complete.
	Piston rings (PO 303807).
	Received.
Inlet Materials	Liners ordered on Grevilles due week 0201.
I III I III I III I I I I I I I I I I	All other materials received.

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

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<u>Item</u>	HP Status
	Machining order placed on MGM. Complete.
Rotor Cooling Assembly	Liner ring and seal ring carrier - all complete.
	Flange pipe (PO 304702). Received. All complete.
	Piston rings ordered on Cross Mfg. Received.
Diaphragm Gland Rings	Due for completion at week 0226.
Shaft Gland Rings.	Material due in from Firth Rixon (PO 306208 #3) week 0150. Received. Due for completion at week 0224.
Inlet Gland Box	Order placed on Innosman (PO 306054). Received. Forecast machined complete week 0233.
Gland box deflector	Order placed on Innosman (PO 306054) Received. Forecast machined complete week 0233.
Lifting gear	Received.
Shipping frame	Order number (PO 305656 #1). Received.
Bolt measuring gear	N/A
Instrumentation.	Site purchase.
Outer shell interface details	Raw material for the diffuser, connection sleeve, shear ring and retaining ring. Received. All clear.
	Machining order placed on Nansons PO 307919. Requested week 0232.

αβχδ

Possible Risks

The retrofit is still very early to requirement dates. During the past month there have been no further effect to the programme due to the blading department. However, we will continue to keep an eye on this situation.

Best regards,

Leigh Thornton.

0130

INTERMOUNTAIN UNIT 1 MANUFACTURING PROGRAMME

							***************************************				***************************************	totomora			2002					
	RCP / BOP	Task Description	Start	Fin0235	·	Sep	Oct 1	lov De	c J	an F	eb M	ar /	\pr N	lay Ju	ın Ju	Aug	Sep	Oct N	lov [)ec
1	CONTRACTOR STATE IN MATERIAL STATE AND	INTERMOUNTAIN 1 MANUF.PROGRAMME - 761R052902	5/W43	1/W05	1/W05											8820			-	mmű
2 5	58BA	HP MODULE SHIPPING FRAME	1/W24	5/W35	5/W35			n manifold militaria		Overell designation of	-	The second	Annual Control	w	-		i		Mercens acres and	
3		HP Module Shipping Frame - Procure & Manufacture	1/W24	5/W35	5/W35		y o constant	and management of		CORC CORDONOR	APPENDIX ALABORATOR	-	-				-			7
4 <i>A</i>	A1C0	HP MODULE ASSEMBLY	1/W40	1/W05	1/W05	- market		and the second		industrial de la constitución de		and the control of th	ĺ	- un version	0.000		1	-		+
5		HP Module Assembly - Prepare Berth	1/W40	5/W41	5/W41			a terrano manos			and compositions	evial III i i i i i i i i i i i i i i i i i	and the second second	-	pesses	PARES CONTRACTOR	Pallicia de Palacia de		OVER CHARGO SERVICE	
6		HP Module Assembly - Prepare Casing / Set To Berth	1/W44	5/W44	5/W44			AND THE PROPERTY OF THE PROPER		NA COMPANY	100	LANGE COMPANY	A. COLORES		Material Section (CO)	***************************************	2000	T	٦	
7		HP Module Assembly - Centralise Diaphragms & Glands	1/W47	5/W48	5/W48			WWWTH GOVERNMENT		E- WARDEN STATE	40	and a record	WANTE OF THE PERSON OF THE PER	SCHOOL STREET, SCHOOL STATE OF	(1)-10)-Electronidade				点	
8	managaan na biring ili kawan ni kepada na mining mahiri pagain na hilikiki bibab biribiri	HP Module Assembly - Fit Rotor & Take Boxed Leads	1/W49	5/W50	5/W50			A DATE DATE OF THE SECOND		ACTION HOUSE	***		AND TOTAL SECTION AND SECTION	MACCINE AND	No. (Characa No. amen	ARTECOMORPHODO	******			4
9	alu eu en la citata en la albantante el termo miniminante	HP Module Assembly - Strip Down,PFD	1/W51	5/W51	5/W51			TAY PRICES A AMPRICE		-			v.cov.r-r-parameter	20000000000000000000000000000000000000	work desirable and distinct	***************************************		ili occidente		Ï
0		HP Module Assembly - Ex-Works Target	5/W51	5/W51	5/W51					900000000000000000000000000000000000000		on a respectation	A CHILLIAN A COLONY	WASHINGTON AND ALL AND	illus and a second	odonesono, sa	The second secon			7
11		HP Module Assembly - Ex-Works Commitment	1/W05	1/W05	1/W05			***		and the second		And a second second	i digi ngadhida dha a	NAMES OF THE PARTY	D. Control of the	- AND	the special state of the speci	ACCOUNTS TO SEE STATE OF SECURITY OF SECUR		
2 /	A1C0	HP INNER CASING	5/W48	5/W43	5/W38			-	+	+		-		-	-	-				
3	The second section of the second seco	HP Inner - Design For Pattern	5/W48	5/W48	5/W48			шт	_	E-C20000		KIRAKKIIIA	.,		ZNC-1887CM	contractement	On the second second	To the second se		
14		HP Inner - Design For Casting	5/W01	5/W01	5/W01	e de la constanta de la consta			†		-		_		CHARLES CONTRACTOR	Amortonia	an amount the contract of the	A STATE OF THE STA		
15 3	302894	HP Inner - Procure	1/W51	5/W22	5/W22	-		1						ana Z	AME(ж	GP-0-4-0-0-11	Coverage and Department		
16		HP Inner - Design For M/C	5/W18	5/W18	5/W18			one in a strike na		Principle Charles	encoloro (ministra) (man	COLONIDATION	+,		Anna Constant	ero antercamo sen	THE STATE OF THE S			
17		HP Inner - Machine	1/W25	5/W43	5/W38			AND EVALUATION			or complete and the control of the c	O. de company	AND THE REAL PROPERTY.	4			3500000			
18	er anhaljer fort is dan visat visat, er jeige visat visat stori anhalver ster 500 ch till de steason.	CYLINDER BOLTING (NIMONIC)	5/W01	5/W32	5/W32			and/Comments (UC) code				-					CONTRACTOR OF THE CONTRACTOR O			
19		HP Module Bolting - Design	5/W01	5/W01	5/W01			D.A. codework of Micro	-	\dashv		and the same of th	***************************************	A trade contract of the self-	moterinosome	cast de cast d		We consider the constant of th		-
20 3	303083	HP Module Bolting - Procure	1/W06	5/W30	5/W30			On month Bill of MA		*						ENF	PAR			-
21	and the minute of a self-like a management of the self-like like like and the self-like like like like like li	HP Module Bolting - Machine	1/W31	5/W32	5/W32			NAW WHITE WATER		900000000000000000000000000000000000000	Annual designation of control		A CONTRACTOR OF THE CONTRACTOR	of an experience of the control of t	delini bilan Heda	L			Щ	-
22 A	A1E0	HP INLETS	5/W04	5/W35	5/W35			Tradition resources		_		-								
23 2	20039226	HP Inlets - Design For Material	5/W04	5/W04	5/W04			0.000		-		and the first of the same	777	en e			-	No.		
24 3	303681	HP Inlets - Inlets Procure	1/W10	5/W25	5/W25			Access Commissions		BOX OF COMMENTS OF	+				i a₁firti	ı rixo	n	Couper Colonia Colonia		
25 3	306228	HP Inlets - Stellite	1/W26	5/W35	5/W35					incition in annual accordance	Special physician desire	averdando vista (Alta	***************************************	A COMPANY OF THE PARTY OF THE P	1		gre	villes	#	-
2 6 3	303634	HP Inlets - Piston Rings	1/W09	5/W26	5/W26					CALCOTTON AND STREET									Щ	
27	**************************************	HP INLET GLAND	5/W02	5/W34	5/W34	1 1		LOPEZ-SELECT			0.00		o de la companya de l	-		***************************************	000000			

IP7008226

INTERMOUNTAIN UNIT 1 MANUFACTURING PROGRAMME

											02		
<u>ID</u>	RCP / BOP	Task Description	Start	Fin0235	<u> </u>	Sep Oct Nov Dec	Jan	Feb Ma	r Apr M	ay Jun	Jul Aug Sep	Oct Nov	Dec
28		HP Inlet Gland - Design For Casting	5/W02	5/W02	5/W02		₩-			AAAAAA Targamer 1990	And the second s		
29	306054	HP Inlet Gland - Procure	1/W05	5/W27	5/W27						inossman		
30		HP Inlet Gland - Design For Machining	5/W18	5/W18	5/W18					-	10000		
31		HP Inlet Gland - Machine	1/W28	5/W33	5/W33								
32		HP Inlet Gland - SubAssy	1/W34	5/W34	5/W34								
33	WOOD AND ALCOHOLOGY SHARE THE THE THE THE THE THE THE THE THE TH	GLAND BOLTING	5/W18	5/W27	5/W27			over a de la					
34		HP Inlet Gland Bolting - Design	5/W18	5/W18	5/W18	Management of the second of th				Stock			
35	306121	HP Inlet Gland Bolting - Machine	1/W22	5/W27	5/W27	According to the control of the cont				4	greenwood	s	
36	A1G*	HP SHAFT GLAND RINGS (INL&EXH)	1/W09	5/W30	5/W30			-					
37	306208	HP Shaft Gland Rings - Procure	1/W09	5/W19	5/W19	Add advantage of the state of t		parties.		FIRTH	RIXON		
38		HP Shaft Gland Rings - Machine	1/W25	5/W30	5/W30				A THEORY OF THE STATE OF	4			
39	entre proportion and anti-anti-an-an-anti-an-p-18601-34	HP DIAPHRAGMS	1/W52	5/W46	5/W46	10 10 10 10 10 10 10 10 10 10 10 10 10 1							
40		HP Diaphragms - Design For Plate sizes	5/W52	5/W52	5/W52		_		To the second		CONTRACTOR CONTRACTOR		
41		HP Diaphragms - Design For Pre - M/C (Rims & Centres)	5/W10	5/W10	5/W10			+		٦	BENEFICIENCE COLOR		
42	304768	HP Diaphragms - Procure Material	1/W52	5/W21	5/W21		4		en negovieski sako	For	ged rings (sto	2)	
43		HP/IP Diaphragms - Machine	1/W22	5/W25	5/W25	A STATE OF THE STA		and the second		. *	The state of the s		
44	33000000000000000000000000000000000000	HP Diaphragms - Manufacture (first)	1/W36	5/W43	5/W43			To the second of		Montonio		==-	
45		HP Diaphragms - Manufacture (last)	1/W39	5/W45	5/W45					400044	<u> </u>		
46		HP Diaphragms - SubAssy	1/W45	5/W46	5/W46								
47	A1P*	HP FIXED BLADES	5/W46	5/W37	5/W36						18898	T	
48		HP Fixed Blades - Design For Procure Wt & Spec	5/W46	5/W46	5/W46	•		Accounts a second					
49	er en de la maria de la mar	HP Fixed Blades - Design For Procure - Final Blade Sizes	5/W52	5/W52	5/W52	1 1 +			And the second s	and the second	0.0000000000000000000000000000000000000		MOGRANIA
50	304787	HP Fixed Blades - Procure	1/W48	5/W13	5/W13	S. Standard							ифиомовичения в подпавания в п
51	indentification control and access to the control access to the control and access to the control acce	HP Fixed Blades - Machine First	1/W25	5/W33	5/W33					1			NAMES OF STREET
52		HP Fixed Blades - Machine Last	1/W29	5/W37	5/W36	NA TANANCA MANAGAMININA MANAGAMINA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMININA MANAGAMIN				_ L	4		essentant de la constant de la const
53	A1P*	HP DIAPHRAGM GLAND RINGS	1/W09	5/W34	5/W34								Average Allahores
54	303496	HP Diaph Gland Seals - Procure	1/W09	5/W19	5/W19			1		AC-U-AN-VEXTORE	*Africandative *Africandative		

INTERMOUNTAIN UNIT 1 MANUFACTURING PROGRAMME

0130

	1	OP Task Description Star		Fin0235										2002							
ID	RCP / BOP		Start		Fin0231	Sep	0	ct N	ov Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct No	/ Dec	<u>Ъ</u>
5		HP Diaph Gland Seals - Machine	1/W25	5/W34	5/W34		***************************************	41.00	AND THE PROPERTY OF THE PROPER						T		_	AT TL	JRBOC/	RE	
6	***************************************	HP ROTOR	5/W43	5/W45	5/W45			-													
7		HP Rotor - Design For Forging	5/W43	5/W43	5/W43		Carrier or Arrest de	-	1		970000			·	CONT. A CAMPAGE AND THE	Production and the second	COMENT (SPEN)	-	No. of the last of		
В		HP Rotor - Design For Gashing	5/W04	5/W04	5/W04	1	Manage of the same	au au ann an		+	j.				in the second se		NOTIFIC DESCRIPTION	NAME OF TAXABLE PARTY.	***************************************		
)	300946	HP Rotor - Procure Forging	1/W48	5/W17	5/W17		province and a change	SURBER	N					SAA	kesp	НМІЕ	DE	ency complete del della			- Anna
)	**************************************	HP Rotor - Design For M/C	5/W08	5/W08	5/W08		And I see the second second	TYPE Acoustic distables	and of the latest and					-	\mathbf{H}		100 pp. 100 pp	SITA - Approximation	500) ₁ mar o ₁ mar o ₂ mar o 100		
]	A Million and Annual Annua	HP Rotor - Pre-Blade Machine	1/W26	5/W30	5/W30		uma moderate del del del	ACHINIDADA A A A CHINICIPA NA			or et al.	Annual Control		annesses,	_ 4			٦ l			-
2	al Massaca and a second and a s	HP Rotor - Fit Blades & PRD	1/W37	5/W41	5/W41	1	A PARTICIPATION OF THE PARTICI	Backery (2004) and descript	-		COLUMNICATION				заходилен				⊒ק		
3	- Company group on the contract of the contrac	HP Rotor - Turn Shroud.Deburr	1/W42	5/W44	5/W44	1		VINE COLOR VINE	To a company of the c		75-12				Activity or company or a	MATERIA		$\prod $	幽		
1	Who case we could not be in the rest that whether	HP Rotor - Overspeed & PFD	1/W45	5/W45	5/W45	uno.	Opples A Anne A visualis	Contract the contract of the c			out of the second								7	_	
5	A1S*	HP MOVING BLADES	5/W46	5/W37	5/W37		PARTITION AND THE	1												200	-
}		HP Moving Blades - Design For Procure - Wt & Spec	5/W46	5/W46	5/W46	1	*Exist property of	Berreitzan autokultak	=		WAY AND THE PROPERTY OF THE PR	TO STATE OF THE PARTY OF THE PA			The state of the s		900	WW-000		A.M.COMP.Com.	
7	***************************************	HP Moving Blades - Design For Procure Blade Sizes	5/W49	5/W49	5/W49		-	e or manorement of				A CONTRACTOR OF THE CONTRACTOR					- 0000		and considerate the constraint of the constraint	actions commonwe	
}	Military agreement and an annual and a second and an annual desired and a second an	HP Moving Blades - Procure	1/W48	5/W11	5/W11		kov kražija do pravija g	PROTECTION CONTRACTOR	V	200000000		S S	teel	.'B'-€	n st	ecko	order	-		epispopos C. Dale	
)		HP Moving Blades - Machine first	1/W28	5/W34	5/W34	1	H+113c3cquoquage	(ANTENDA)	- AND THE PROPERTY OF THE PROP		(EIDH) coccommo		9800	n de la constante de la consta	ŀr	*		Balei	nder	200000	-
0		HP Moving Blades - Machine last	1/W28	5/W37	5/W37		-	400	Approximation of the contract					ALCOHOLD .		<u> </u>	HD or show	عاد.	alendei	a second	-

From: <bill.eisma@power.alstom.com>

To: <jim-n@ipsc.com> **Date:** 11/14/02 6:58AM

Subject: Intermountain Delta # 1 Progress

Dear Jim,

Attached is the updated progress report for the Delta # 1 retrofit components. There are presently no delays i.e. the delivery to site will be as per Contract.

Regards,

Bill Eisma

(See attached file: November 2002.doc) (See attached file: Intermountain 1 to End Oct 2002.pdf)

CONFIDENTIALITY: This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose or store or copy the information in any medium.

cc: <phong-d@ipsc.com>

INTERMOUNTAIN UNITS 1 & 2

HP TURBINE RETROFIT

HP TURBINE SWALLOWING CAPACITY

UNIT 2

Performance Tests were carried out on Unit 2 by PGT in April 2002.

The installed ASME primary flow section, located downstream of the highest pressure feedwater heaters, was acid cleaned during the retrofit outage. On inspection, the internal surface was found to be "scarred and rough". In accordance with ASME guidelines, a value of $\pm 2.5\%$ was selected by PGT as the base uncertainty of the feedwater flow nozzles.

The corrected throttle flow (derived test flow corrected to design pressure and temperature) was determined to be as follows:

	Test 7	Test 8
PGT instrumentation	7,073,880 lb/h	7,077,720 lb/h
Station Instrumentation	6,931,726 lb/h	6,938,958 lb/h

This compared to the requirement of the throttle flow to be in the range 6,900,000 lb/h and 6,975,000 lb/h.

However, ALSTOM were surprised at this apparent high figure (although the $\pm 2.5\%$ uncertainty was noted), and in addition IPSC indicated that they were having to throttle more than they expected at a current (maximum) nominal load of 900 MW. IPSC estimated that the heat rate at 900 MW was approximately 0.1% worse than expected.

In order to better estimate the likely throttle flow (ie trying to reduce the uncertainty surrounding the feedwater flow measurement), ALSTOM carried out a calculation starting from the nominal heat balance diagram TS29247 at 6,900,000 lb/h throttle flow

Using this as base, the effect of all the measured test conditions was determined - these included:

Throttle pressure and temperature
Reheat temperature
Condenser pressures
HP feedwater heater inlet and outlet temperatures
Steam flow to IP rotor cooling,
Steam flow to feedwater pump turbines.
Superheater spraywater flow

From this heat balance calculation, the following comparison is made:

INTERMOUNTAIN UNIT 2

			TS29247			APRIL 2002				
			Corrected		PGT Test	Station				
		TS29247	to Test		Measured	Instrumentation.				
		04400	conditions		0000 0	0000				
Throttle pressure	psia	2412.2	2389.8	4	2389.8	2398				
Throttle temperature	°F	1000.0	993.2	4	993.2	997.5				
Throttle flow	lb/h	6,900,000	6,849,904		7,039,852	6,904,554				
Steam flow to IP rotor cooling	lb/h	17,115	18,987	4	18,987					
HP exhaust pressure	psia	629.0	630.9		628.2	624.5				
IPSV pressure	psia	585.5	587.3		582.3	582.4				
IPSV temperature	°F	1000.0	1006.7	4	1006.7	1007.5				
IP exhaust pressure	psia	138.8	137.2		137.1					
Flow to FPT's (Total)	lb/h	276,367	282,021	4	282,021					
Condenser A pressure	"Hq	2.99	3.56	4	3.56	3.62				
Condenser B pressure	"Hg	2.24	2.80	4	2.80	2.81				
Condenser C pressure	"Hg	1.66	2.55	4	2.55	2.44				
Condenser hotwell Temperature	°F	114.9	121.2		121.1					
DC outlet temperature	°F	123.5	128.7		128.5					
DC Outlet temperature	'	120.0	120.7		120.0					
Heater 1 outlet temperature	°F	162.7	163.5			164.3				
Heater 2 outlet temperature	°F	200.6	201.0			204.0				
Heater 3 outlet temperature	°F	270.2	270.3			270.7				
Heater 4 outlet temperature	°F	303.1	303.1			302.6				
Deaerator outlet temperature	°F	350.3	350.3			348.7				
,										
Heater 6 inlet temperature	°F		355.7			355.3				
Heater 6 outlet temperature	°F	404.0	403.8	4	403.8					
Heater 6 drain temperature	°F		364.9	4		364.9				
Heater 7 outlet temperature	°F	488.6	487.6	4	487.6					
Heater 7 drain temperature	°F		412.5	4	412.5					
Heater 8 outlet temperature	°F	552.4	550.9	4	550.9					
Heater 8 drain temperature	°۴		497.4	4	497.4					
Superheater spraywater flow	lb/h	0	108288	4	108288	66860				
Reheater spraywater flow	lb/h	0	0	4	0	10527				
Make up	%	1.0	0.0			10027				
Generator output	MW	973186	969660		981954	982200				
Heat rate	Btu/kWh	7683	7707		7886	7750				
Commence of the Commence	, w		A1 : 4 = .	4						

Note: = specified data in heat balance calculation. All other data is as-calculated.

ΑΒΧΔ

From the tabulated data, it can be seen that the calculated throttle flow was 6,849,904 lb/h, but the generator output was only 969,660 kW compared to the test measurement of 981,954 kW. Additional throttle flow must therefore be present to generate this increased power.

Thus the additional throttle flow factor required to generate 981,954 kW is 981,954 / 969,660 = 1.0127.

This gives a required throttle flow of $1.0127 \times 6,849,904 = 6,936,898 \text{ lb/h}$.

The actual test was conducted at main steam conditions different to nominal design, therefore a correction factor is required to derive what the throttle flow would have been with design main steam conditions:

Flow correction factor =
$$\frac{2412.2 \times \sqrt{(993.2 + 460)}}{2389.8 \sqrt{(1000 + 460)}} = 1.0070$$

Hence the **estimated** throttle flow for Intermountain Unit 2 at VWO under design main steam conditions is $6,936,898 \times 1.0070 = 6,985,456 \text{ lb/h}$.

This compares with the PGT corrected flow of 7,077,720 lb/h (ie estimated corrected flow is 1.3% lower than the PGT corrected flow derived from the flowmeter with a nominal uncertainty of $\pm 2.5\%$)

UNIT 1 PROPOSAL

Unit 1 fixed blades are about to be manufactured.

In discussions with IPSC it has been mutually understood that, as the units are limited for the forseeable future to a maximum load around 900 - 950 MW (including some throttling reserve for rapid load pickup capability), it is desirable for Unit 1 capacity to be reduced compared to that of the installed Unit 2.

This reduction is agreed to be nominally 1% of throttle flow, and will be achieved by modifying the fixed blade throat openings of stage 1 only.

However, to maintain the final feedwater temperature, the fixed blade following the HP steam path extraction has also to be modified. Without this additional modification, the final feedwater temperature would reduce by approximately 1°F.

With these changes to HP stage 1 and 6 fixed blades, the expected throttle flow of Unit 1 (assuming similar as-made nozzle sizes to Unit 2) would be 6,985,456 x 0.99 = 6,915,600 lb/h.

MEMORANDUM

cc: Phil Kearney/ File



Power Steam Turbines

To:

Adrian Bramley

Project Manager, Rugby

From:

Joyce Moore

STRGT, Rugby

Date:

24th July 2002

Subject: Intermountain- HP heaters out of service

In response to James Nelson's e-mail (dated 12th July 2002), regarding the ability of the Intermountain turbines to tolerate short term operation with HP heaters isolated, a variety of scenarios were assessed. These scenarios were as follows:

- 1) One HP heater string isolated
- 2) All 6 HP heaters isolated
- 3) One top HP heater (e.g. heater 8b) isolated
- 4) Both top HP heaters isolated
- 5) One HP 7 heater isolated
- 6) Both HP 7 heaters isolated
- 7) One HP 6 heater isolated
- 8) Both HP 6 heaters isolated

In addition to determining the LP turbine exhaust flow under these conditions (as was requested), the heater pressures on the steam side of all heaters and the IP exhaust pressure were calculated. The heater pressures were then checked against the design pressures.

The IP exhaust pressure gives an indication of the loading on the latter stages of the IP turbine as well as on the LP turbine stages. This pressure was compared to that given by the predicted performance of the cycle with VWO (see drawing no. TS29247). From Test 8 carried out by PGT in April 2002, it can be seen that the turbines have been run under conditions very similar to those shown on TS29247. This shows the ability of the turbines to tolerate these conditions, although the IP exhaust pressure achieved (137.2 psia) is higher than that previously indicated on the OEM 5% O/P heat balance diagram. (Note: Units 1 & 2 turbines have previously operated at very similar pressure levels during BMCR tests in 1998)

The results showed that under all conditions, the LP exhaust loading was below the design limit of $15,000 \text{ lb/ft}^2$ per exhaust. Heater pressures also fell within design with

MEMORANDUM

Power Steam Turbines

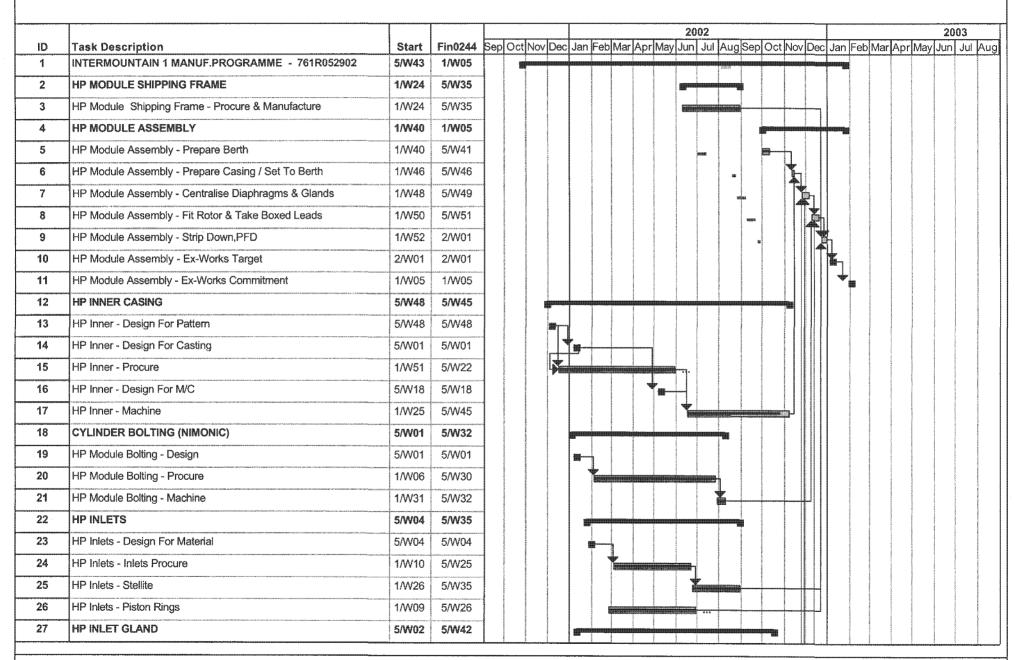
the exception of the deaerator exceeding its design limit when all 6 HP heaters were isolated at throttle valves wide open (VWO). In all scenarios at VWO however, the IP exhaust pressure exceeded 137.2 psia. Further calculations were carried out in order to find the power output to which the turbines must be limited in order to reduce the IP exhaust pressure a value of 137.2 psia (the maximum normal operating pressure with all heaters in service- subject to review by IPSC/GE).

As a result of the analysis, it is advised that the generator output should be limited to the following when any of the HP heaters are tripped:

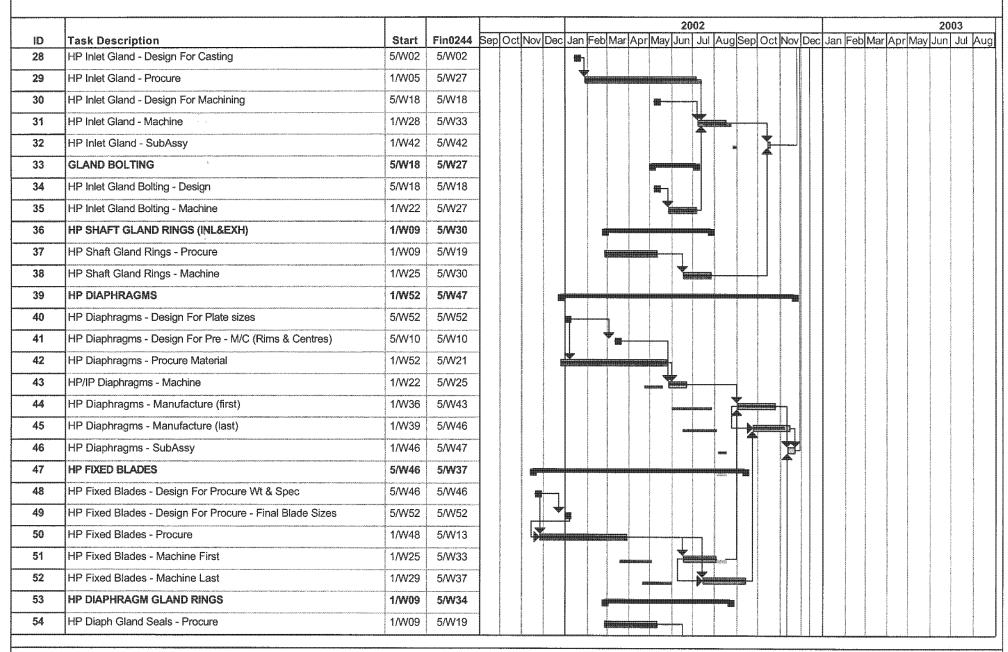
1) One HP heater string isolated	923MW
2) All 6 HP heaters isolated	870MW
3) One top HP heater isolated	956MW
4) Both top HP heaters isolated	942MW
5) One HP 7 heater isolated	962MW
6) Both HP 7 heaters isolated	952MW
7) One HP 6 heater isolated	969MW
8) Both HP 6 heaters isolated	965MW

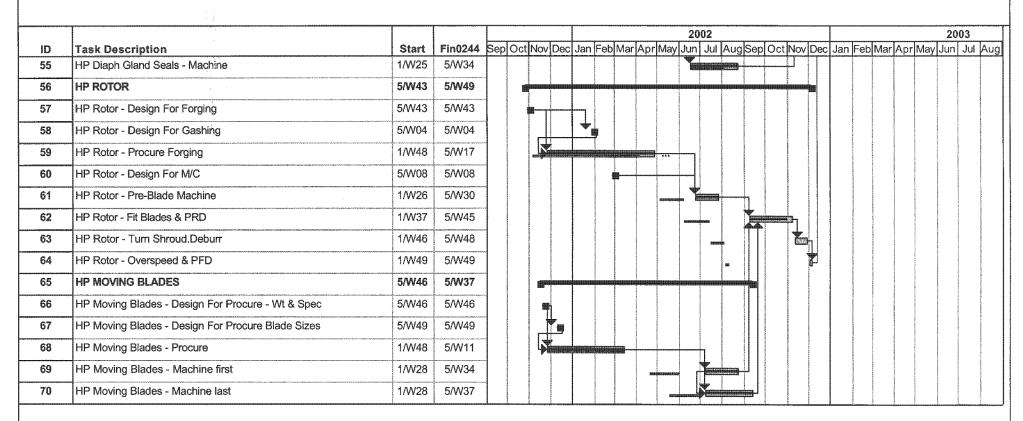
In order to operate at higher loads, it is recommended that IPSC contact GE in order to obtain the maximum allowable conditions for safe operation of the IP and LP turbines.

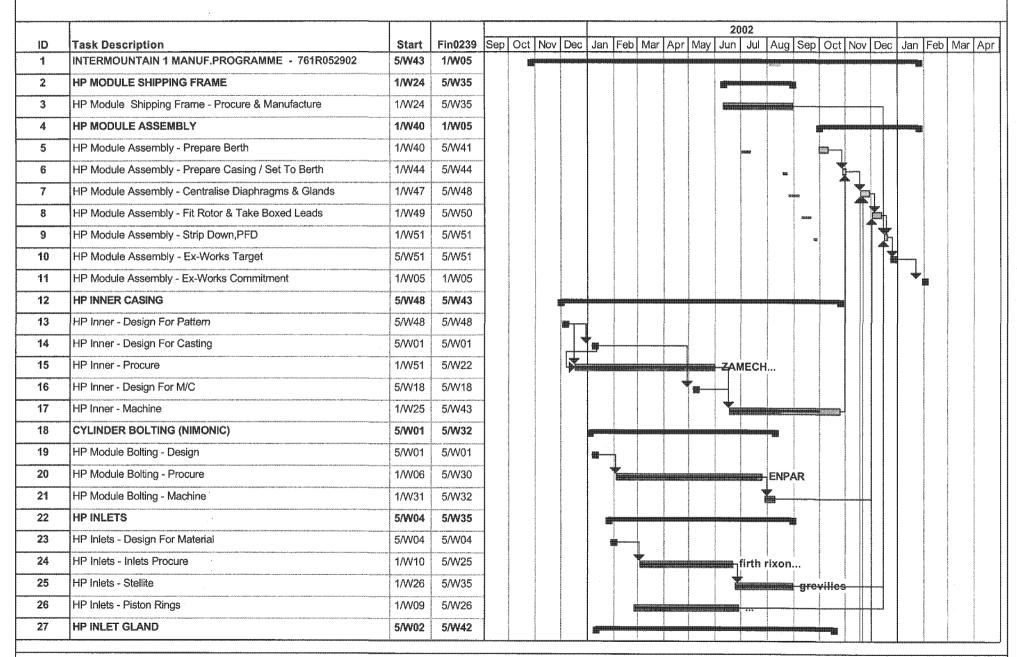
Joyce Moore

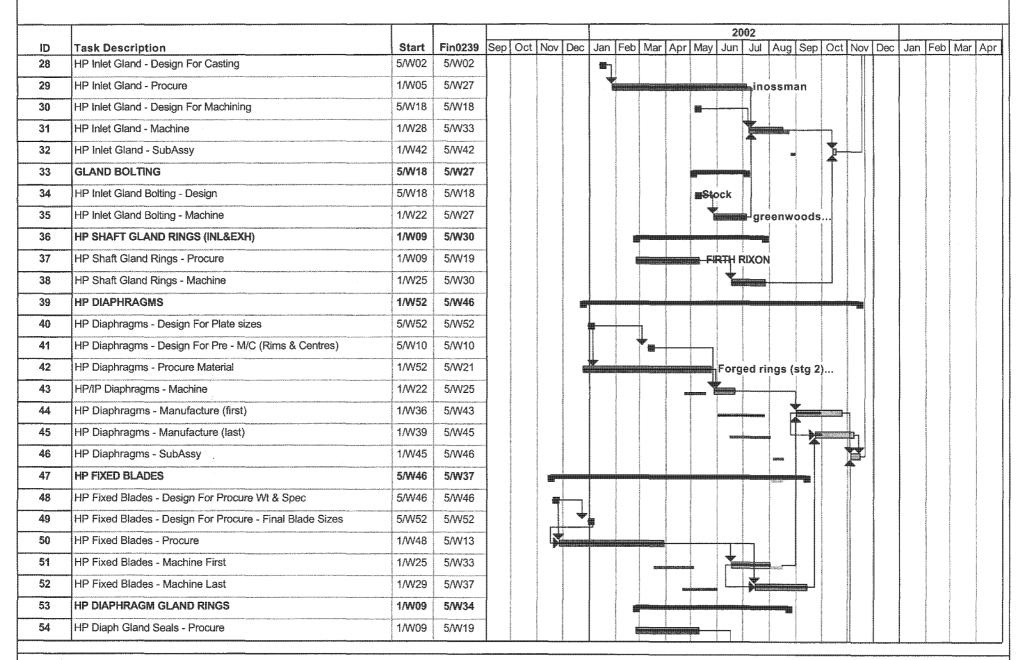


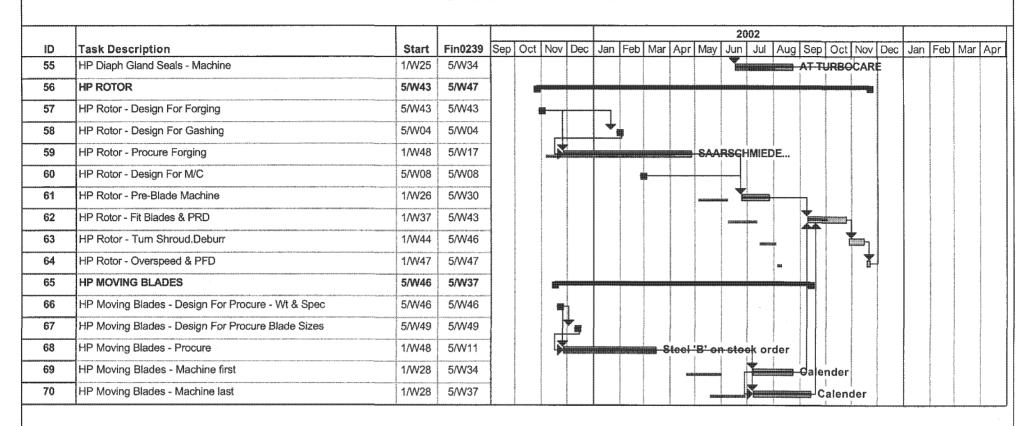
IP7008235











<robert.cunningham@power.alstom.com>

To:

<phong-d@ipsc.com>

Date:

1/17/03 4:11AM

Subject:

Intermountain - Balance Weight Tapping Details

Hello Phong

Please find attached extracts showing :-

- the location of the balance weight planes relative to the end glands.	(See attached file: int-ga.tif)
The dimension of 12" is approximate. In Rugby we do not have any details showing the access holes on the cover glands (you may need to make this longer)	
- the tapping for the balance weight on the rotor	(See attached file: int-rotor.tif)

I hope that this is enough information for you. If not you can discuss this further with Wally next week.

Best regards

Rob C

<gary.randle@power.alstom.com>

To:

<PHONG-D@ipsc.com>, <jim-n@ipsc.com>

Date:

10/10/02 7:11AM

Subject:

INTERMOUNTAIN - HP ROTOR OVERSPEED TEST

Please find attached notification Int004 for the Overspeed Test of the HP Rotor.

(See attached file: Int004RotOS.doc)

Would you please let us me know if you wish to attend. Any other queries please let us know.

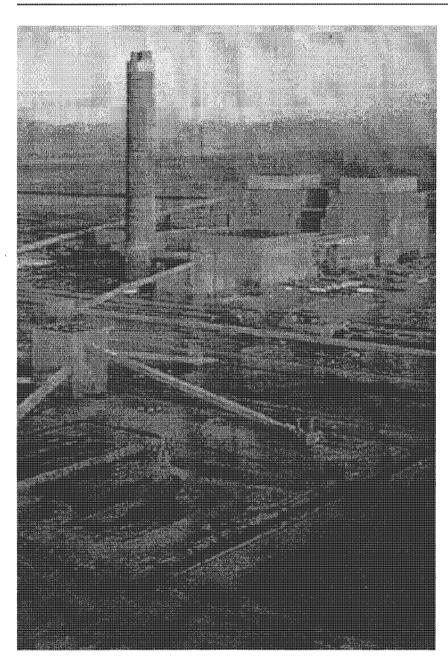
Regards

Gary

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Steam Turbine Retrofits for Fossil-fired Plants



Intermountain, Unit 1, USA

875MW Fossil-fired

Intermountain Power
Station is located in Delta,
Utah, USA.

This retrofit project consists of a high pressure pressure (HP) inner module replacement and the provision of technical support during the installation. The aim is to enable IPSC to generate electricity more economically over the remaining life of the plant, utilising ALSTOM Power advanced steam path technology.





PowerSteam Turbines

Technical Overview

In April 2001 ALSTOM Power received the order from the Intermountain Power Service Corporation, Delta, Utah, to retrofit Intermountain Units 1 & 2 with a single flow, high pressure (HP) steam path replacement. This comprises a new rotor with eight stages, fixed and rotating blades, HP casing and HP shaft gland assembly.

Original Unit Commissioning

Unit 1 - 1986 Unit 2 - 1987

Retrofit Commissioning

Unit 2 - April 2002 Unit 1 - April 2003

Fuel Coal

Speed (rpm) 3600

Operation Mode Base load

Original Manufacturer

General Electric

Turbine (OEM) Type 'S2'

No. of HP Stages

Original: 6 + 1 double row opposed flow nozzle stage Retrofit: 8

Live Steam Conditions

2400 psig/1000°F/1000°F

Efficiency Improvement

More than 6 percentage point increase in HP turbine efficiency

Turbine Retrofit Solution

Project time schedule12 months for first unit

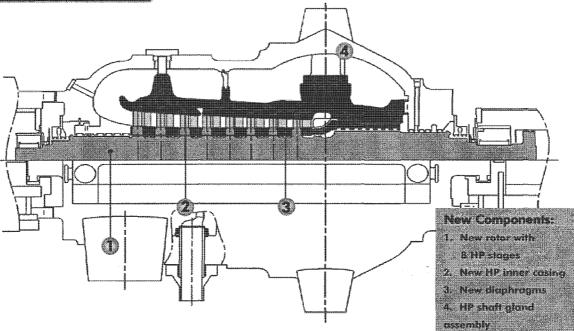
New rotor and HP inner casing comprise eight HP stages

- Advanced technology rotating blades with integral shrouds and multi-fork pinned roots
- Advanced 3-D fixed blading with integral root and tip platforms
- Improved overall steam path design with smooth outer boundary and exhaust diffuser

Customer Benefits

This HP retrofit strengthens Intermountain Power Service Corporation position in the de-regulated USA power generation market through increased and sustained steam path efficiency, improved reliability and reduced overhaul requirements.

Sectional Arrangement





PWER/BPROS/KSUNIT1USA/uke/SSTB/03.02/CH/3047
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D	Task Description	Durn	Start	Fin0039	Sep	Oct	t Nov	Dec	Jan	Feb	Mar	Apr	May			Aug	Sep	Oct	Nov	Dec	†
1	INTERMOUNTAIN 1 MANUF.PROGRAMME - 761R052902	65.2w	26 Oct '01	27 Jan '03		-															F
2	HP MODULE SHIPPING FRAME	12w	10 Jun '02	30 Aug '02		derrorates and a second	integer of the second					- Production and the second	***	4		-				!	
3	HP Module Shipping Frame - Procure & Manufacture	12w	10 Jun '02	30 Aug '02		and the same of th	e manufacture (Change	and the same of th				No. of Concession,									
4	HP MODULE ASSEMBLY	17w	30 Sep '02	27 Jan '03		***************************************	CARRIAGE TO THE TOTAL TO THE	-		- Andrews of the second		Natural Services				- CONTRACTOR CONTRACTO	d				+
5	HP Module Assembly - Prepare Berth	2w	30 Sep '02	11 Oct '02		*****	sacra tuto sa tago	and a second sec		- And Andrews	-	NATIONAL PROPERTY OF THE PROPE	COLUMN CO	A CONTRACTOR OF THE PARTY OF TH	P. C.	***************************************	¢	⊃ ¬			
3	HP Module Assembly - Prepare Casing / Set To Berth	1w	28 Oct '02	01 Nov '02			A heart carrier ments	COMMON CONTRACTOR				and an annual section of the section	Action to the control of the control	ACM TANADAS AND ACM TO THE ACM TO	TTTO AND ADDRESS OF THE PARTY O	manage profession del		Ţ	_		
7	HP Module Assembly - Centralise Diaphragms & Glands	2w	18 Nov '02	29 Nov '02		And Market Market		***************************************				Management appropriate	on and a second	All series was necessary.		plat annule Lotania			Þ	n l	
8	HP Module Assembly - Fit Rotor & Take Boxed Leads	2w	02 Dec '02	13 Dec '02		e de la companya de l		er-consensor					economic services	WETPPER LINEAR STORY		Control of Control					
)	HP Module Assembly - Strip Down,PFD	1w	16 Dec '02	20 Dec '02		Personal street	Transmission or management					THE CONTRACTOR OF THE CONTRACT	ACCIONACIO DE COMPANSACION DE	or enterior and agree					-	紫	
0	HP Module Assembly - Ex-Works Target	0w	20 Dec '02	20 Dec '02		-	8 (0.00000000000000000000000000000000000	9					SCHOOL STATE OF THE SCHOOL	THE STATE OF THE S		CORNELL MANAGEMENT				14	4
1	HP Module Assembly - Ex-Works Commitment	0w	27 Jan '03	27 Jan '03		a a particular de la composição de la co		NOTE: PROPERTY.					Met service control	**************************************		A construction					
2	HP INNER CASING	42.2w	30 Nov '01	20 Sep '02																	
3	HP Inner - Design For Pattern	0w	30 Nov '01	30 Nov '01		and the second s	and the same of th						account second	-							
4	HP Inner - Design For Casting	Ow	04 Jan '02	04 Jan '02		PMM - a reason region	epiconore Laws		<u> </u>	-	<u> </u>		1	TOTAL PROPERTY.							-
5	HP Inner - Procure	23.95w	17 Dec '01	31 May '02		en	200	湦						ZAN	/ /ECH	l	re-indicate manage				-
6	HP Inner - Design For M/C	0w	03 May '02	03 May '02		**********************	none and a second	AND CONTRACTOR OF THE CONTRACT		Section Comments			-				Chambridge to the College				
7	HP Inner - Machine	14w	17 Jun '02	20 Sep '02			CONTRACTOR VALUE	AN THE STATE OF TH		es i i series de la companya de la c		CHICAGO WATCH		4							
8	CYLINDER BOLTING (NIMONIC)	31.2w	04 Jan '02	09 Aug '02		***************************************		an security were respectively				***				-	***************************************				
9	HP Module Bolting - Design	0w	04 Jan '02	04 Jan '02		Acceptance and a second	O CONTRACTOR OF THE CONTRACTOR	Ne. 2010 (2017) 100 No. (1017) 100 N			American constants con	Manual 2000 (100 (100 (100 (100 (100 (100 (100				- Contraction of the Contraction					
0	HP Module Bolting - Procure	24.95w	04 Feb '02	26 Jul '02		NATIONAL PROPERTY.	and the second s			L						ENP/	\R				
21	HP Module Bolting - Machine	2w	29 Jul '02	09 Aug '02		*******	annone contract of the contrac	aria de describir de la constanta de la consta		- And in contract of the law of t		ACCIDENTAL MACROSING AN	00.01.25000.00.00.00	erandidikan kanas	•	<u> </u>					
2	HP INLETS	31.2w	25 Jan '02	30 Aug '02		- Andreas and a second a second and a second a second and		AND THE PARTY OF T				VANCAGE OF THE PARTY OF THE PAR			-			OUT COMMENTS			THE RESIDENCE OF THE PERSON NAMED IN
3	HP Inlets - Design For Material	0w	25 Jan '02	25 Jan '02		REPORT LANGE OF THE PARTY OF TH		A saverana Miller		<u> </u>	h	THE COMMON THROUGH THE PARTY OF		STREET, AND ADDRESS OF THE PERSON OF THE PER		***	and the state of t				
4	HP Inlets - Inlets Procure	16w	04 Mar '02	21 Jun '02				VP P P TRIBUTE A BRANCH		-	<u> </u>		<u> </u>	<u> </u>	i firth	rixon.		Commission			***************************************
5	HP Inlets - Stellite	10w	24 Jun '02	30 Aug '02		WARREN STREET		NOCTURE TOWNSHOOD		alternational section of		CANADAMAGAMAGAMAGAMA	02000 M (III) M (III) M (III)	1		INAPIGATION	grev	/illes		Ш	-
6	HP Inlets - Piston Rings	18w	25 Feb '02	28 Jun '02		manage provide a contra		All State (Stillers Sales		A DESCRIPTION A							_			Ш	
7	HP INLET GLAND	32.2w	11 Jan '02	23 Aug '02		*Yeardistant Ass	Post of the Control o	With the statement of													
 8	HP Inlet Gland - Design For Casting	0w	11 Jan '02	11 Jan '02		W	warnés médies				No. of Contract of	AA ACCOMANA				Appendix .	Water and				

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ID	Task Description	Durn	Start	Fin0039	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May			Aug Sep	Oct	Nov	Dec) Ji
29	HP Inlet Gland - Procure	23w	28 Jan '02	05 Jul '02		Control of the Contro									jino	ssman		1000000		T
30	HP Inlet Gland - Design For Machining	Ow	03 May '02	03 May '02		And the second s	and the second			Direction of the Control of the Cont			-		1	1000 Maria		State of the state		
31	HP Inlet Gland - Machine	6w	08 Jul '02	16 Aug '02		THE A STATE OF THE				CHECKE CONTRACTOR IN					*	h		100000000000000000000000000000000000000		
32	HP Inlet Gland - SubAssy	1w	19 Aug '02	23 Aug '02		AVCANA STREET				Owner State Debut			44.46.0000		T	*		H		
33	GLAND BOLTING	9.2w	03 May '02	05 Jul '02		A A CACAMINET A A ANGARAN				SCHOOL SCHOOL STATE	A STATE OF THE PARTY OF THE PAR					IT				
34	HP Inlet Gland Bolting - Design	0w	03 May '02	03 May '02		ACCUPATION OF THE PERSON OF TH	CONTRACTOR OF THE PERSON OF TH	and the same of th		WORK CHANGE	A A A A A A A A A A A A A A A A A A A		≣S ŧc	ock			***			
35	HP Inlet Gland Bolting - Machine	6w	27 May '02	05 Jul '02				California de la calegrapia de la calegr		A CONTRACTOR OF THE CONTRACTOR	DOMESTICAL PROPERTY OF THE		4		Jgre	eenwoods		O Landing Land		
36	HP SHAFT GLAND RINGS (INL&EXH)	22w	25 Feb '02	26 Jul '02			A STATE OF THE STA	en introducente									Caracteristics	V. managara		
37	HP Shaft Gland Rings - Procure	11w	25 Feb '02	10 May '02	ļ.		***************************************	DO NOTE OF THE PARTY OF THE PAR		W05000000			⊨ FII	RTH R	IXON	**************************************	And a second sec			
38	HP Shaft Gland Rings - Machine	6w	17 Jun '02	26 Jul '02	,		***************************************			Andrew Andrews	A POST OFFICE AND A POST OFFICE AND A POST OFFICE AND A POST OFFI OFFI OFFI OFFI OFFI OFFI OFFI OFF		named and the second	4	***************************************		abiliti AlAlamanino	Date of the Control o		
39	HP DIAPHRAGMS	47w	24 Dec '01	15 Nov '02			***************************************		-									-		
40	HP Diaphragms - Design For Plate sizes	0w	28 Dec '01	28 Dec '01	-		essentation to the control of the co		 		and the second		de faithfuil de fa			and the sea on the sea of the sea				
41	HP Diaphragms - Design For Pre - M/C (Rims & Centres)	0w	08 Mar '02	08 Mar '02			************			and the constitution of th	₩			AND THE PROPERTY OF THE PROPER		A CONTRACTOR OF THE PROPERTY O			77	
42	HP Diaphragms - Procure Material	22w	24 Dec '01	24 May '02		THE PERSON AND PERSON	and an analysis	E		ļ				Forge	ed rii	ngs (stg 2)			
43	HP/IP Diaphragms - Machine	4w	27 May '02	21 Jun '02						cananananan			4	_			a a constant and a co	0.000		
44	HP Diaphragms - Manufacture (first)	8w	02 Sep '02	25 Oct '02		A MATERIAL WAS A CONTRACTOR				NAMES AND ADDRESS OF THE PARTY AND ADDRESS OF	AAAAAAAAAAAAAAA		- A Company	X (100 to 100 to			ط			
45	HP Diaphragms - Manufacture (last)	7w	23 Sep '02	08 Nov '02		MALANCE PROFESSION CO.	***************************************				THE PARTY OF THE P		***************************************					-		
46	HP Diaphragms - SubAssy	2w	04 Nov '02	15 Nov '02				***************************************		MATERIAL DE LA COMPANIA DE LA COMPAN	A A A A A A A A A A A A A A A A A A A		- Committee of the Comm			1	VAANBEER AWARDEE	甘		
47	HP FIXED BLADES	42.2w	16 Nov '01	06 Sep '02		MAN CAR											DAMAGNA CONTRACTOR OF THE CONTRACTOR OF T	1		
48	HP Fixed Blades - Design For Procure Wt & Spec	0w	16 Nov '01	16 Nov '01		DEPARTMENT OF THE PROPERTY OF	-	 		10 m	A CONTRACTOR OF THE CONTRACTOR					**************************************	ALL ALTERNATION AND ALTERNATIO			
49	HP Fixed Blades - Design For Procure - Final Blade Sizes	0w	28 Dec '01	28 Dec '01				+			-		CW COMMON ON THE			an in the contract of the cont	acada de construir de la const			
50	HP Fixed Blades - Procure	18w	26 Nov '01	29 Mar '02		CONTRACTOR OF STATEMENT ST	B					-	-		_		THE PARTY PARTY OF THE PARTY OF			
51	HP Fixed Blades - Machine First	8.95w	17 Jun '02	16 Aug '02		AND THE PROPERTY OF THE PROPER	BBBBBBBBBBBB			ACCORDINATE DESCRIPTION OF THE PERSON OF THE	THE PROPERTY OF THE PARTY OF TH		A2720000000	1		-	WAXAGOOG WAXAGOOG		-	
52	HP Fixed Blades - Machine Last	8w	15 Jul '02	06 Sep '02		- Independent Control	ALC: WARRISH WARR	Managing accounts		ALTONO PARTICIONE	Manual Adams Store at	The second secon	DECONOMINATION OF		本		AND THE PERSON OF THE PERSON O			
53	HP DIAPHRAGM GLAND RINGS	26w	25 Feb '02	23 Aug '02		WWW. Market Annual Control of the Co	Ni Biline in description										VALUE OF THE PERSON NAMED IN COLUMN NAMED IN C			
 54	HP Diaph Gland Seals - Procure	11w	25 Feb '02	10 May '02		AAACHI (DIRINA) WAAAA	and the same of th	-		-			<u> </u>	 		a a company of the co	BORRAGO PROPERTIES			
55	HP Diaph Gland Seals - Machine	10w	17 Jun '02	23 Aug '02		Andreas and provided the state of the state	***************************************	-		Personal and Personal	- Commission of the Commission		· · · · · · · · · · · · · · · · · · ·	4	************		JRBG	CARE		
 56	HP ROTOR	54.2w	26 Oct '01	08 Nov '02						No.	1380-Freeze		g v				AAAAAA			

14 Aug '02 Page 3 of 3 2002 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec ID **Task Description** Durn Start Fin0039 Sep Oct Nov Dec Jan 26 Oct '01 26 Oct '01 57 HP Rotor - Design For Forging 0w HP Rotor - Design For Gashing 25 Jan '02 25 Jan '02 58 0w HP Rotor - Procure Forging 59 26 Nov '01 26 Apr '02 22w SAARSCHMIEDE... HP Rotor - Design For M/C 22 Feb '02 60 0w 22 Feb '02 61 HP Rotor - Pre-Blade Machine 24 Jun '02 26 Jul '02 5w HP Rotor - Fit Blades & PRD 11 Oct '02 62 09 Sep '02 5w HP Rotor - Turn Shroud.Deburr 63 3w 14 Oct '02 01 Nov '02 HP Rotor - Overspeed & PFD 04 Nov '02 08 Nov '02 64 1w HP MOVING BLADES 16 Nov '01 13 Sep '02 65 43.2w 66 HP Moving Blades - Design For Procure - Wt & Spec 0w 16 Nov '01 16 Nov '01 67 HP Moving Blades - Design For Procure Blade Sizes 0w 07 Dec '01 07 Dec '01 HP Moving Blades - Procure 68 16w 26 Nov '01 15 Mar '02 Steel 'B' on stock order 69 HP Moving Blades - Machine first 7w 08 Jul '02 23 Aug '02 -Calender HP Moving Blades - Machine last 70 13 Sep '02 10w 08 Jul '02 ^JCalender

<bill.eisma@power.alstom.com>

To:

<jim-n@ipsc.com>

Date:

8/19/02 11:39AM

Subject:

Intermountain. Delta 2 Monthly Report

Dear Jim,

Please find attached the monthly report for INTERMOUNTAIN.

We have established a new standardized format - only problem is I don't know what number this would be.

Please let us know if you have any comments

Regards

Bill Eisma

(See attached file: August 2002.doc) (See attached file: Intermountain August 2002.pdf)

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CC:

<phong-d@ipsc.com>

<bill.eisma@power.alstom.com>

Date:

<phong-d@ipsc.com>
10/21/02 7:01AM

Subject:

Intermountain. Delta 1 Bladed Rotor

Phong,

Attached are some pictures of the Delta 1 bladed rotor. This completes the third payment milestone for this unit. An invoice will be send via overnight courier and we would appreciate if you would expedite the payment for transfer in November 02.

Thanks,

Bill Eisma

(See attached file: Pa150031A.jpg) (See attached file: Pa150023 A.jpg) (See attached file: Pa150025 A.jpg) (See attached file: Pa150030 A.jpg) (See attached file: Pa150016 A.jpg)

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cc: <jim-n@ipsc.com>

PROGRESS REPORT

αβγδ

Power Steam Turbines

Project:

Intermountain Unit 1 & 2

Project Manager:

Kevin Spires

Department:

STRGP

Progress Report Number:

Issued Date:

November 13th 2002

Customer Purchase Order No.:

01 - 45510

ALSTOM Power USA, Inc P.O No.: 1350030

STR Order Number:

R0529/01 (Unit 2) & R0529/02 (Unit 1)

Circulation:

STRG

Mr. K. Spires

STRGE

Mr. R. Cunningham

USA

Mr. B. Eisma

IPSC

Mr. J. Nelson

ALSTOM Power Ltd Newbold Road Rugby, Warwickshire CV21 2NH England Tel.: +44 (0) 1788 577111

Fax: +44 (0) 1788 531700 www.alstom.com

Registered Office: Newbold Road Rugby, Warwickshire CV21 2NH Registered in England No. 4347573

Power

Steam Turbines

PROGRESS REPORT

Page: 2 of 5 Date: 13th November 2002

PM : K. Spires

Department: STRG P

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Power

Steam Turbines

PROGRESS REPORT

Page: 3 of 5

Date: 13th November 2002

PM: K. Spires

Department: STRG P

1. SUMMARY OF PROJECT

This is the Progress / Status Report covering the activities regarding the retrofit of the two (2) turbines unit # 1 & 2 in the Intermountain Power Plant. For the retrofit, a new steam path for the HP Turbine will be designed and implemented in both turbines Intermountain unit # 1 &2 (unit 2 being first). New HP Rotors and Inner Cylinders will be manufactured and installed.

Each turbine retrofit consists of:

- Design and supply of HP rotor with 8 stages of rotating blading,
- Design and supply of fixed blade diaphragms (8 stages in total),
- Design and supply of HP Inner Cylinder,
- Design and supply of balance gland casing and sealing rings (for inlet end),
- Design and supply of stellited inlet liner assemblies (fitted into existing outer casing),
- Design and supply of miscellaneous shims and packing pieces, etc.,
- High speed balancing of the new rotor assembly,
- HP Heater Connection Assembly
- Transportation Cradle for assembled inner cylinder module complete with rotor,
- Technical Support for the installation of the new components,
- Design and supply of special tools or lifting equipment that differ from those required for the existing equipment,
- Supply of Heat Balance Diagrams, etc.
- Witness of post upgrade performance tests,
- Certification, QA documentation, modifications to service manuals, installation & maintenance drawings.

This report covers the period from 1st October 2002 – 31st October 2002

Unit #2: All items delivered, installed and unit back in service

Unit #1: All items on schedule

2. LIST OF DELAYS

<u>COMPONENT</u>

<u>ACTIONS</u>

No Delays

Power

Steam Turbines

PROGRESS REPORT

Page: 4 of 5

Date: 13th November 2002

PM: K. Spires

Department: STRG P

3. ACTUAL STATUS

3.1. Turbine Parts

3.1.1 Engineering for Rotating parts

All Complete

3.1.2 Engineering for Stationary parts

All Complete.

3.1.3 Manufacturing of Rotating parts

Unit 1 HP Rotor blading ongoing HP Moving Blades – completed

3.1.4. Manufacturing of Stationary parts

Unit 1 components

HP Inner Cylinder – machining in progress due to complete week 45

HP Cylinder Bolting - complete

HP Inlets - complete

HP Inlet Gland - machining completed

Gland Bolting - complete

HP Shaft Gland Rings - complete

HP Diaphragms - manufacture commenced

HP Fixed Blades – manufacture completed

HP Diaphragm Gland Rings -completed

3.2 Any Other Parts

3.2.1 Engineering for any other parts

Completed

3.2.2 Manufacturing of any other parts

None

3.3 Installation

None

Power

Steam Turbines

PROGRESS REPORT

Page: 5 of 5

Date: 13th November 2002

PM: K. Spires

Department: STRG P

3.4 Quality Assurance

Nothing to report.

3.5 Personnel

None

3.6 **Upcoming Highlights**

Rotor Overspeed and Balance December 3rd. Phong Do from IPSC will attend.

4. ADDITIONAL TOPICS

None

5. LIST OF ATTACHMENTS

Unit 1 Programme with Milestone dates

6. ABBREVIATIONS

AP

ALSTOM Power

HP

High Pressure

PROGRESS REPORT

αβγδ

Power Steam Turbines

Project:

Intermountain Unit 1 & 2

Project Manager:

Kevin Spires

Department:

STRGP

Progress Report Number:

Issued Date:

October 23rd 2002

Customer Purchase Order No.:

01 - 45510

ALSTOM Power USA, Inc P.O No.: 1350030

STR Order Number:

R0529/01 (Unit 2) & R0529/02 (Unit 1)

Circulation:

STRG

Mr. K. Spires

STRGE

Mr. R. Cunningham

USA

Mr. B. Eisma

IPSC

Mr. J. Nelson

ALSTOM Power Ltd Newbold Road Rugby, Warwickshire CV21 2NH England Tel.: +44 (0) 1788 577111

Fax: +44 (0) 1788 531700 www.alstom.com

Registered Office: Newbold Road Rugby, Warwickshire CV21 2NH Registered in England No. 4347573 $\alpha \beta \gamma \delta$

Power Steam Turbines

PROGRESS REPORT

Page: 2 of 5

Date: 23rd October 2002

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Steam Turbines

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Page: 3 of 5

Date: 23rd October 2002

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1. SUMMARY OF PROJECT

This is the Progress / Status Report covering the activities regarding the retrofit of the two (2) turbines unit # 1 & 2 in the Intermountain Power Plant. For the retrofit, a new steam path for the HP Turbine will be designed and implemented in both turbines Intermountain unit # 1 &2 (unit 2 being first). New HP Rotors and Inner Cylinders will be manufactured and installed.

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- Design and supply of stellited inlet liner assemblies (fitted into existing outer casing),
- Design and supply of miscellaneous shims and packing pieces, etc.,
- High speed balancing of the new rotor assembly,
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- Transportation Cradle for assembled inner cylinder module complete with rotor,
- Technical Support for the installation of the new components,
- Design and supply of special tools or lifting equipment that differ from those required for the existing equipment,
- Supply of Heat Balance Diagrams, etc.
- Witness of post upgrade performance tests,
- Certification, QA documentation, modifications to service manuals, installation & maintenance drawings.

This report covers the period from 1st July 2002 – 31st July 2002

Unit #2: All items delivered, installed and unit back in service

Unit #1: All items on schedule

2. LIST OF DELAYS

COMPONENT

ACTIONS

No Delays

Power

Steam Turbines

PROGRESS REPORT

Page: 4 of 5

Date: 23rd October 2002

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Department: STRG P

3. ACTUAL STATUS

3.1. Turbine Parts

3.1.1 Engineering for Rotating parts

All Complete

3.1.2 Engineering for Stationary parts

All Complete.

3.1.3 Manufacturing of Rotating parts

Unit 1 HP Rotor Blade assembly ongoing and due for completion week 43

HP Moving Blades - completed

3.1.4. Manufacturing of Stationary parts

Unit 1 components

HP Inner Cylinder – machining in progress due to complete week 43

HP Cylinder Bolting - complete

HP Inlets - complete

HP Inlet Gland - machining completed

Gland Bolting - complete

HP Shaft Gland Rings - complete

HP Diaphragms - manufacture commenced

HP Fixed Blades - manufacture ongoing, due to complete last week 37

HP Diaphragm Gland Rings -completed

3.2 Any Other Parts

3.2.1 Engineering for any other parts

Completed

3.2.2 Manufacturing of any other parts

Heater Connection Materials - all available

Power

Steam Turbines

PROGRESS REPORT

Page: 5 of 5

Date: 23rd October 2002

PM: K. Spires

Department: STRG P

3.3 Installation

None

3.4 Quality Assurance

Nothing to report.

3.5 Personnel

None

3.6 Upcoming Highlights

Rotor Overspeed and Balance November 20 / 21

4. ADDITIONAL TOPICS

None

5. LIST OF ATTACHMENTS

Unit 1 Programme with Milestone dates

6. <u>ABBREVIATIONS</u>

AP

ALSTOM Power

HP

High Pressure

From: Jim Knapp To: Phong Do

Date: 12/13/02 3:33PM

Subject: Outage Work on Unit One

Main Turbine Front Standard:

This is the same work that was done during the last outage. All of the instruments associated with turbine EHC and Control Air at the front standard will be replaced.

All parts are on site with the exception of stock #47525 (Trip & Lockout Valve). There are two of these on order, the due date in the computer shows 2/18/03.

HP Turbine upgrade:

The thermocouples for the top and bottom of the HP Shell will need to be specified and ordered. Bill Morgan will take care of this item.

The same thing as the last upgrade on the Main Steam thermocouples and pressure transmitters.

1A Boiler Feed Pump:

The solenoid valves (SV-6, SV-8, SV-12, & SV-13) will be replaced like we did on Unit Two outage. This is part of the reliability upgrade, like the Main Turbine front standard instrument replacement. The parts are on site and committed to Work Order 03-91572-0.

1B Boiler Feed Pump:

The solenoid valves (SV-6, SV-8, SV-12, & SV-13) will be replaced like we did on Unit Two outage. This is part of the reliability upgrade, like the Main Turbine front standard instrument replacement. The parts are on site and committed to Work Order 03-91573-0.

Both of the feed pumps will have the piping and tubing moved away from the inboard bearing to allow better access for all future mechanical work on the bearings. There are a few miscellaneous problems with bad valves and cracked instrument lines that will also be corrected during the outage. The Injection water pressure control system will be relocated to make it less susceptible to vibration wear and improve the reliability of that system. This was done on Unit 2 Feed Pumps, also.

There has been some talk of installing more Bently Vibration probes on the Main Turbine, but I think that has been canceled for this Outage.

I&C will be installing a new Bently Nevada Vibration system in the back room. This is an obsolescence issue, but will require a large amount of I&C work. This was also done on the Unit Two Outage, and took about 200 hours. It will have to be complete before the end of the outage. This is a Mike Nuttall capital project that took about three full weeks to make it functional and a couple more weeks to finish it up after the outage was over.

There has been some discussion from the Performance Group concerning the Indikon system. I think they are going to try to get that done on both feed pumps this outage. This work will require a new cabinet (or remodeling and existing unused cabinet) in the electrical equipment room east of the main control room. This could turn into a big job, if new cables are required and there is very much setup

needed. Much of this work could be done after the outage, however.

Nothing else I can think of right now. If anything more comes up, I'll let you know. Thank you for your help and support.

Jim Knapp

<bill.eisma@power.alstom.com>

To:

<jim-n@ipsc.com>

Date:

9/24/02 6:38AM

Subject:

IPSC Delta # 1, Monthly Progress Report

James,

Attached is the updated monthly progress report for Delta unit 1.

Regards,

Bill Eisma

(See attached file: September 2002.doc)(See attached file: Intermntn 1 to End Aug 2002.pdf)

CONFIDENTIALITY: This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose or store or copy the information in any medium.

CC:

<phong-d@ipsc.com>

Evelyn Warnick/ Thomas Travel <ewarnick01@hotmail.com>

To:

Phong Do <PHONG-D@IPSC.com>

Date:

10/21/02 12:08PM

Subject: Itinerary for Phong Do - November 17

Kelly Cloward From:

Brad Thompson; George Cross; Mike Alley; Norman Mincer; Ralph To:

Newberry; Richard Houston; Stewart Rowley

12/3/02 10:41AM Date: Mannings USA Subject:

I placed req #186342 and 186343 to cover the costs of induction bolt heating services and shell hydraulic closure system for tops-on/tops-off alignment for the HP & IP turbine work. The first req is for the IP section, the second req is for the HP section. The costs need to be separate because the HP work is capital. Please refer to last year's PO #02-19413.

call with questions-

KC

CC: James Nelson; Phong Do

<bill.eisma@power.alstom.com>

To:

<phong-d@ipsc.com>

Date:

10/21/02 8:41AM

Subject:

Milestone Payment Invoice for Delta 1

Phong,

Attached is a copy of the 3 rd. milestone payment invoice for Delta unit 1. The original is in the mail and should be in your accounts department tomorrow 10/22/02. I hope you will process the invoice for payment prior to your trip to the UK to assure the transfer of the amount due per the Contractual agreement period.

Thanks,

Bill Eisma

(See attached file: D1.51483.XLS) (See attached file: DeltaPaymsch.PDF)

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CC:

<jim-n@ipsc.com>

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date: Subject: 10/30/02 3:17AM Proposed itinerary

Hi Phong

I have compiled a rough agenda.

Please have a look and comment as appropriate. If you agree in principle I will make arrangements with Hydratight.

As it is only likely to take half a day to visit Hydratight, is there anywhere you would like to visit. They are based close to Birmingham (probably 1 hours drive) and we could call back via Stratford / Warwick or if you let me know somewhere in particular I can work out our route.

Thanks

Kevin

(See attached file: Proposed Itinerary for Phong Do.doc)

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				Shaft diome and length	eters, spigot heights, external widths s, internal chamfers and radii	-0.010"	
				Centre disto	ances and centres to faces	±0.030"	
-				L			

<alan.holmes@power.alstom.com>

To:

<phong-d@ipsc.com>

Date:

10/17/02 5:24AM

Subject:

Re: Intermountain HP Rotor End Balance

We have checked our measurements (both manual measurements and Faro data) of the unit 1 rotor against the manufacturing drawing for the new rotor and attached are 2 images of the balance weight areas

(See attached file: INT-N1.tif)

(See attached file: INT-N2.tif)

The images show the Faro arm data (showing the rotor pips, rotor profile) from the GE rotor and the geometry of the new rotor to Alstom's rotor machining drawing (R201/A0/3249).

The heavy lines are the rotor machining profile, the chain dotted lines are the rotor forging outline and the other lines are the Faro arm data geometry.

(for scale - the balance weight holes are 3/4" UNC).

These drawings show that the balance weight hole positions for the new rotor are within 0.06" of those on the unit 1 GE rotor that we measured. have also looked at the new rotor for unit 1, currently in the factory, and the balance weight hole positions are as per the drawing. Since the unit 2 rotor was machined to the same machining data we can be confident that the unit 2 rotor balance planes are in the same position as unit 1 and hence as required by the machining drawing.

Conclusion

We believe that the balance planes on the new Alstom HP rotors are in the same position as the balance planes on the unit 1 GE rotor.

Have you tried to use this balance plane on previous occasions ? Is there any difference between unit 1 and unit 2 in this area. When you come to install the unit 1 retrofit in spring 03 I suggest you check the line-up of the N2 balance plane with the access hole prior to removing the top half, to determine if this condition exists with the GE

The line-up situation could be improved by remachining the threaded access hole in the gland cover with a larger size deliberately angled relative to the existing hole to improve the line up.

Regards Alan

"Phong Do" <PHONG-D@ipsc.com> on 16/10/2002 20:51:12

Alan HOLMES/GBRUG01/Power/ALSTOM@GA, Kevin To: SPIRES/GBRUG01/Power/ALSTOM@GA

cc: "James Nelson" <JIM-N@ipsc.com>, Bill Eisma/USRIC02/Power/ALSTOM@GA

Subject: HP Rotor End Balance

Dear Alan/Kevin,

One of the Unit 2 HP retrofit startup major concerns was the offset between the rotor-N2-End Balance Hole Center and the N2 Casing Access Hole Centers. The center lines of the N2 casing holes were about 1/2" to 3/4" off (lower) relative to the N2 rotor hole's center lines. The N1 center lines were lined up good.

After some failures, our performance group finally created some flexible tools and was able to install the end balance weights. This process took a significant bite out of the startup time.

Please provide recommendations to correct the above concern.

Thanks.

Phong Do

Day Phone: (435)864-6475

Fax: (435)864-0775

Email: Phong-D@IPSC.Com

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Date: 12/13/02 8:27AM

Subject: Re: Low Speed Balance Recommendation

My approach to low speed balancing would be:

- 1 If a shaft line is running with acceptable levels of vibration, do nothing. Slow speed balancing simply because the rotor is out and it seems like a good idea, usually is not.
- Never, never, never remove the factory fitted (high speed balance) weights as a matter of course. I cannot understand why anyone would even think of doing this, but my experience in North America indicates that it is almost standard practice. It completely negates the original high speed balance. (This is not likely to have been a major factor in your IP rotor problem because the rotor was bent and had a large out of balance that would swamp the factory high speed balance).
- Remove any weights that have been fitted for in-situ balance correction. They may be correcting an out of balance on an adjacent rotor. ie if you ever slow speed balance the new HP rotor fitted to unit 2, remove the weights added to the front end to correct the balance problem due to the IP, before balancing.
- Review the condition of the rotor (straightness) and any work carried out eg re-blading and make a judgement as to where any balance error might be occuring. Add or remove weights in planes close to the likely source of the out of balance.

As I remember from conversations with Barry Ingle, the IP rotor had a significant bend and the front coupling OD and face were trued up because they were running out of true. However you did not true up the coupling OD and face at the rear of the rotor which were likely to be running out by the same amount because the rotor bend was in the centre. In my opinion, not trueing up the rear coupling is likely to be a major contributor to your balance problem. The IP rotor was slow speed balanced running on its journals. When the rear of the IP rotor is coupled to the LP rotor, the rabet fit ensures that the IP coupling runs true to the LP coupling which means that the journals are not running true to each other because there is a known runout between the IP rear journal and coupling. Rugby rules require concentricity better than 0.0008" TIR journal/journal but allow 0.0012" TIR maximum coupling/coupling because it is recognised that journal/journal is most important for balance (the individual rotors are balanced supported on their journals not on their couplings). The face error on the IP rear coupling will cause the IP rotor to bend slightly when it is bolted to the LP rotor so it is running in a different bend (and balance) condition to when it was slow speed balanced. This is why we require coupling face errors to be less than 0.0005" TIR on ex service rotors (less than 0.00025" TIR on new rotors).

Hope this helps Regards Alan "Phong Do" <PHONG-D@ipsc.com> on 10/12/2002 16:06:57

To:

Alan HOLMES/GBRUG01/Power/ALSTOM@GA, Kevin

SPIRES/GBRUG01/Power/ALSTOM@GA

cc:

Subject:

Low Speed Balance Recommendation

Alan,

Please provide guideline/recommendation regarding turbine rotor low speed balance.

On the last U2 outage, we did focused on the midplane for the rotor excessive runout during the low speed balance.

Your quick response will be greatly appreciated so that the recommendation to our manager would be issued soon. Thank you for all of your wonderful support.

Phong Do

Day Phone: (435)864-6475

Fax: (435)864-0775

Email: Phong-D@IPSC.Com

CONFIDENTIALITY:

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From: <robert.cunningham@power.alstom.com>

To: "Phong Do" <PHONG-D@ipsc.com>

Date: 1/23/03 1:46AM

Subject: Re: Shell Thermo Couple

Hello Phong

To my knowledge, the only additional instrumentation devices that we asked for were on the outer upper shell at the inlet branch.

The attached drawing shows the position and mounting machining details.

(See attached file: R200_A0_10325_C_EN_001.tif)

Can you please provide more details on the outer shell thermocouples that you are describing. (Who asked for them, etc)

Myself and Adrain will give you a ring at about 4.00 UK time (9.00 Utah time).

Speak to you later.

Rob C

"Phong Do" <PHONG-D@ipsc.com> on 22/01/2003 18:43:33

To: Robert CUNNINGHAM/GBRUG01/Power/ALSTOM@GA

cc: "Bill Morgan" <BILL-M@ipsc.com>, "Jim Knapp" <JIM-KNAPP@ipsc.com>,

"James Nelson" <JIM-N@ipsc.com>, "John Fritzges" <JOHN-F@ipsc.com>,

Alan HOLMES/GBRUG01/Power/ALSTOM@GA, Kevin SPIRES/GBRUG01/Power/ALSTOM@GA, Wally

FALCONER/GBRUG01/Power/ALSTOM@GA

Subject: Shell Thermo Couple

Dear Rob,

Please provide info & drawing regarding the HP outer shell thermocouple installation.

Last year we install two temporary thermocouples on the HP outer shell, 1 on the upper half and other on the lower half, about 1/3 of the shell length relative to the front end. The thermocouples provide critical startup shell temperatures to ensure an acceptable thermal growth of the shell. Due to the short notice, we welded the two thermal pads (about 1" square) on the shell. This installation method may not provide a most accurate info.

I understand that Alstom has a better method of installing the shell thermocouple, ie, drill, tap the shell and install the thermocouple

```
about 1/2 of the shell thickness...

Rob, please provide recommendations and drawings.

Thanks.
```

```
From:
             "sgbrown" <mb7238k@server-mail.com>
             "Phong Do" <PHONG-D@ipsc.com>
To:
Date:
            12/10/02 4:44PM
Subject:
           Re: Turbine Horizontal Joint Hydraulic Bolting
Hi Phong,
Please see the attached as requested.
Best regards,
Steve Brown
>Please send me, ASAP, the user list pertaining hydraulic bolting for
>power plants.
>I appreciated your time and info. Our staff is interesting in learning
>more about the technology. Thanks.
```

<chris.howell@technofast.com>

CC:

From:

<robert.cunningham@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date:

10/18/02 1:26AM

Subject:

Re: Update drawing - Intermountain HP Rotor

Hello Phong

Please find below an extract from the Intermountain HP Rotor drawing. (Embedded image moved to file: pic07129.pcx)

The number of holes for the stub shaft have been increased from 8 to 12.

Regards

Rob C

"Phong Do" <PHONG-D@ipsc.com> on 17/10/2002 19:45:10

To:

Robert CUNNINGHAM/GBRUG01/Power/ALSTOM@GA

cc:

Subject:

Update drawing

Rob,

In reviewing the HP rotor balancing matter, I learned that the drawing R201/A0/3249, HP Rotor Machining needs to be updated to reflex the new HP Front End drill and tap hole corrections (number of holes, dimensions...) to match with our GE existing coupling. This applies for both units. Please send an updated drawings.

Thanks.

 \mathtt{PTD}

PROGRESS REPORT

αβγδ

Power Steam Turbines

Project:

Intermountain Unit 1 & 2

Project Manager:

Kevin Spires

Department:

STRGP

Progress Report Number:

Issued Date:

September 23rd 2002

Customer Purchase Order No.:

01 - 45510

ALSTOM Power USA, Inc P.O No.: 1350030

STR Order Number:

R0529/01 (Unit 2) & R0529/02 (Unit 1)

Circulation:

STRG

Mr. K. Spires

STRGE

Mr. R. Cunningham

USA

Mr. B. Eisma

IPSC

Mr. J. Nelson

ALSTOM Power Ltd Newbold Road Rugby, Warwickshire CV21 2NH England Tel.: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

www.alstom.com

Registered Office: Newbold Road Rugby, Warwickshire CV21 2NH Registered in England No. 4347573 αβγδ

Power

Steam Turbines

PROGRESS REPORT

Page: 2 of 5

Date: 23rd September 2002

PM: K. Spires

Department: STRG P

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Power

Steam Turbines

PROGRESS REPORT

Page: 3 of 5

Date: 23rd September 2002

PM: K. Spires

Department: STRG P

1. SUMMARY OF PROJECT

This is the Progress / Status Report covering the activities regarding the retrofit of the two (2) turbines unit # 1 & 2 in the Intermountain Power Plant. For the retrofit, a new steam path for the HP Turbine will be designed and implemented in both turbines Intermountain unit # 1 &2 (unit 2 being first). New HP Rotors and Inner Cylinders will be manufactured and installed.

Each turbine retrofit consists of:

- Design and supply of HP rotor with 8 stages of rotating blading,
- Design and supply of fixed blade diaphragms (8 stages in total),
- Design and supply of HP Inner Cylinder,
- Design and supply of balance gland casing and sealing rings (for inlet end),
- Design and supply of stellited inlet liner assemblies (fitted into existing outer casing),
- Design and supply of miscellaneous shims and packing pieces, etc.,
- High speed balancing of the new rotor assembly,
- HP Heater Connection Assembly
- Transportation Cradle for assembled inner cylinder module complete with rotor,
- Technical Support for the installation of the new components,
- Design and supply of special tools or lifting equipment that differ from those required for the existing equipment,
- Supply of Heat Balance Diagrams, etc.
- Witness of post upgrade performance tests,
- Certification, QA documentation, modifications to service manuals, installation & maintenance drawings.

This report covers the period from 1st July 2002 – 31st July 2002

Unit #2: All items delivered, installed and unit back in service

Unit #1: All items on schedule

2. LIST OF DELAYS

COMPONENT

ACTIONS

No Delays



Power

Steam Turbines

PROGRESS REPORT

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3. ACTUAL STATUS

3.1. Turbine Parts

3.1.1 Engineering for Rotating parts

All Complete

3.1.2 Engineering for Stationary parts

All Complete.

3.1.3 Manufacturing of Rotating parts

Unit 1 HP Rotor is finish machined and ready for blade assembly which is due to commence in week 37.

HP Moving Blades – due to be completed week 37

3.1.4. Manufacturing of Stationary parts

Unit 1 components

HP Inner Cylinder – machining in progress due to complete week 38

HP Cylinder Bolting – machining due to be completed week 32

HP Inlets - complete

HP Inlet Gland - machining completed

Gland Bolting - complete

HP Shaft Gland Rings - complete

HP Diaphragms – material available, due to commence first week 36

HP Fixed Blades – manufacture ongoing, due to complete last week 36

HP Diaphragm Gland Rings -completed

3.2 Any Other Parts

3.2.1 Engineering for any other parts

Completed

3.2.2 Manufacturing of any other parts

Heater Connection Materials - all available

αβγδ

Power

Steam Turbines

PROGRESS REPORT

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3.3 Installation

None

3.4 Quality Assurance

Nothing to report.

3.5 Personnel

None

3.6 Upcoming Highlights

None.

4. ADDITIONAL TOPICS

None

5. LIST OF ATTACHMENTS

Unit 1 Programme with Milestone dates

6. <u>ABBREVIATIONS</u>

AP

ALSTOM Power

HP

High Pressure

Summary of U2 Acceptance Tests

VWO								
	Acceptan	ce Tests	Confirmat	ion Tests	Average	Gaurantee	Pre-Upgrade Unc	ertainty
	Test 7	Test 8	Test 9	Test 10			. •	•
HP Turbine Efficiency (%)	92.85	92.83	92.72	92.80	92.80	92.20	83.48 ± 0.	346%
HP Wheel Power (MW)	302.8	304.5	300.4	304.4	303.01	299.0	259.4 ± 2.	508%
Throttle Flow (PPH)	7,079,377	7,084,189	7,063,494	7,069,808	7,074,217	6,900,000	6,412,292 ± 2.	510%
IP Turbine Efficiency (%)								
Net Turbine Cycle Heat Rate (Btu/kwh)	7,701	7,636	7,671	7,676	7,671	7,683	7,807 ± 2.	.554%

From:

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date: Subject: 1/20/03 5:23PM Project data sheet

Phong

Please have a look at this first draft.

Thanks

Kevin

(See attached file: Intermountain.pdf)

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

Proposed Itinerary for Phong Do, IPSC, Visit to Rugby 19-22 Nov 2002

19th November

Arrive BHX & Transfer to Ashlawn House PM Visit to factory for a quick tour of Intermountain components Meal at Ashlawn

20th November

Proposed visit to Hydratight Sweeney Meal at local restaurant

21st November

Discussions on Intermountain Unit 2 performance Discussions on Unit 1 Meal at local restaurant

22nd November AOB Witness Overspeed of Unit 1 rotor Meal at local resaurant

23rd November Fly back to USA From:

<kevin.spires@power.alstom.com>
"Phong Do" <PHONG-D@ipsc.com>

To: Date:

12/11/02 5:01AM

Subject:

Re: Intermountain U1 Over Speed Result

Hi Phong

Thanks for your email.

Here is Nigel's reply which confirms we are right.

Hope this answers your query.

Regards

Kevin

----- Forwarded by Kevin SPIRES/GBRUG01/Power/ALSTOM on 11/12/2002 11:57 -----

Nigel ARMSTRONG 11/12/2002 11:51

To:

Kevin SPIRES/GBRUG01/Power/ALSTOM@GA

cc:

Dave MURPHY/GBRUG01/Power/ALSTOM@GA, Bob MITCHELL-KING/GBRUG01/Power/ALSTOM@GA

Subject: Re: Intermountain U1 Over Speed Result (Document link: Kevin SPIRES)

Kevin,

 $\,$ I will confirm the numbers are correct and extremely good , they are not however unusual for this type of shaft as manufactured and balanced here.

In inches we are allowed according to Rugby Specification 601/0020 at 3600 RPM 0.00032" Pk/ Pk (Vertical Pedestal movement) we are allowed double that at any other speed.

For this rotor the Pk/Pk readings are as follows.

Speed

25000		
RPM	Ped 1	Ped 2
1850	0.0000208"	0.0000196"
3600	0.0000116"	0.0000412"
3960	0.0000996"	0.00008"
4170	0.0002036"	0.000048"
4320	0.0000716"	0.000148"
	HP Rear	HP Front

If any doubts remain I would suggest that station can talk to two of our previous retrofit customers:-

- 1) Miller because when the first unit ran station staff had to double check their instrumentation to see if it was actually working .
- 2)Spruce, because they would not have believed the overspeed vibration numbers if they had not witnessed the whole process themselves and had it reconfirmed when the machine was installed and first run at site.

I would say the secret of low vibration at site is in the alignment, accuracy of any compensation offsets within the alignment and the actual condition of the adjoining shafts.

regards Nigel

"Phong Do" <PHONG-D@ipsc.com> on 10/12/2002 17:31:17

To: Kevin SPIRES/GBRUG01/Power/ALSTOM@GA

cc:

Subject: U1 Over Speed Result

Kevin,

Would you please talk to N. Armstrong to clarify the vertical displacement unit of the U1 HP rotor high speed balance result. The graph indicates that the unit is in micro meter. From the graph, the maximum peak-to-peak vibration is about 6 micro meter, or about 0.0002". This is extremely tooooo small. Please verify the unit and give me the result in (1/1000"). Thank you.

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cc: <bill.eisma@power.alstom.com>

INTERMOUNTAIN UNITS 1 & 2

HP TURBINE RETROFIT

HP TURBINE SWALLOWING CAPACITY

UNIT 2

Performance Tests were carried out on Unit 2 by PGT in April 2002.

The installed ASME primary flow section, located downstream of the highest pressure feedwater heaters, was acid cleaned during the retrofit outage. On inspection, the internal surface was found to be "scarred and rough". In accordance with ASME guidelines, a value of $\pm 2.5\%$ was selected by PGT as the base uncertainty of the feedwater flow nozzles.

The corrected throttle flow (derived test flow corrected to design pressure and temperature) was determined to be as follows:

	Test 7	Test 8
PGT instrumentation	7,073,880 lb/h	7,077,720 lb/h
Station Instrumentation	6,931,726 lb/h	6,938,958 lb/h

This compared to the requirement of the throttle flow to be in the range 6,900,000 lb/h and 6,975,000 lb/h.

However, ALSTOM were surprised at this apparent high figure (although the $\pm 2.5\%$ uncertainty was noted), and in addition IPSC indicated that they were having to throttle more than they expected at a current (maximum) nominal load of 900 MW. IPSC estimated that the heat rate at 900 MW was approximately 0.1% worse than expected.

In order to better estimate the likely throttle flow (ie trying to reduce the uncertainty surrounding the feedwater flow measurement), ALSTOM carried out a calculation starting from the nominal heat balance diagram TS29247 at 6,900,000 lb/h throttle flow.

Using this as base, the effect of all the measured test conditions was determined - these included:

Throttle pressure and temperature
Reheat temperature
Condenser pressures
HP feedwater heater inlet and outlet temperatures
Steam flow to IP rotor cooling,
Steam flow to feedwater pump turbines.
Superheater spraywater flow

From this heat balance calculation, the following comparison is made:

INTERMOUNTAIN UNIT 2

			TS29247		TEST 8 A	APRIL 2002
			Corrected		PGT Test	Station
		TS29247	to Test		Measured	Instrumentation.
Throttle pressure	psia	2412.2	conditions 2389.8	4	2389.8	2398
Throttle temperature	°F	1000.0	993.2	4	993.2	997.5
Throttle flow	lb/h	6,900,000	6.849.904		7,039,852	6,904,554
		•				
Steam flow to IP rotor cooling	lb/h	17,115	18,987	4	18,987	
HP exhaust pressure	psia	629.0	630.9		628.2	624.5
IPSV pressure	psia	585.5	587.3		582.3	582.4
IPSV temperature	°F	1000.0	1006.7	4	1006.7	1007.5
•						
IP exhaust pressure	psia	138.8	137.2		137.1	
Flow to FPT's (Total)	lb/h	276,367	282,021	4	282,021	
Condenser A pressure	"Ha	2.99	3.56	4	3.56	3.62
Condenser B pressure	"Hg	2.24	2.80	4	2.80	2.81
Condenser C pressure	"Hg	1.66	2.55	4	2.55	2.44
Condenser hotwell Temperature	°F	114.9	121.2		121.1	
DC outlet temperature	°F	123.5	128.7		128.5	
Heater 1 outlet temperature	°F	162.7	163.5			164.3
Heater 2 outlet temperature	°F	200.6	201.0			204.0
Heater 3 outlet temperature	°F	270.2	270.3			270.7
Heater 4 outlet temperature	°F	303.1	303.1			302.6
Deaerator outlet temperature	°F	350.3	350.3			348.7
Heater 6 inlet temperature	°F		355.7			355.3
Heater 6 outlet temperature	°F	404.0	403.8	4	403.8	000.0
Heater 6 drain temperature	°F	10 110	364.9	4		364.9
Heater 7 outlet temperature	°F	488.6	487.6	4	487.6	501.5
Heater 7 drain temperature	°F	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	412.5	4	412.5	
Heater 8 outlet temperature	°F	552.4	550.9	4	550.9	
Heater 8 drain temperature	°F		497.4	4	497.4	
Cura da astar anno cunto da da cu	Un fle	0	400000	4	400000	00000
Superheater spraywater flow Reheater spraywater flow	lb/h lb/h	0 0	108288 0	4	108288 0	66860 10527
Make up	%	1.0	0.0	4	0.0	10527
wake up	70	1.0	0.0	•	0.0	
Generator output	MW	973186	969660		981954	982200
Heat rate	Btu/kWh	7683	7707		7886	7750
ika di kacamatan di Jawa Santa Kasama. Tanggaran	* # 10 to	v	Note:		specified data	in heat balance

ote: = specified data in heat balance calculation. All other data is as-calculated.

ABXA

From the tabulated data, it can be seen that the calculated throttle flow was 6,849,904 lb/h, but the generator output was only 969,660 kW compared to the test measurement of 981,954 kW. Additional throttle flow must therefore be present to generate this increased power.

Thus the additional throttle flow factor required to generate 981,954 kW is 981,954 / 969,660 = 1.0127.

This gives a required throttle flow of $1.0127 \times 6,849,904 = 6,936,898 \text{ lb/h}$.

The actual test was conducted at main steam conditions different to nominal design, therefore a correction factor is required to derive what the throttle flow would have been with design main steam conditions:

Flow correction factor =
$$\frac{2412.2 \times \sqrt{(993.2 + 460)}}{2389.8 \sqrt{(1000 + 460)}} = 1.0070$$

Hence the **estimated** throttle flow for Intermountain Unit 2 at VWO under design main steam conditions is $6,936,898 \times 1.0070 = 6,985,456 \text{ lb/h}$.

This compares with the PGT corrected flow of 7,077,720 lb/h (ie estimated corrected flow is 1.3% lower than the PGT corrected flow derived from the flowmeter with a nominal uncertainty of $\pm 2.5\%$)

UNIT 1 PROPOSAL

Unit 1 fixed blades are about to be manufactured.

In discussions with IPSC it has been mutually understood that, as the units are limited for the forseeable future to a maximum load around 900 - 950 MW (including some throttling reserve for rapid load pickup capability), it is desirable for Unit 1 capacity to be reduced compared to that of the installed Unit 2.

This reduction is agreed to be nominally 1% of throttle flow, and will be achieved by modifying the fixed blade throat openings of stage 1 only.

However, to maintain the final feedwater temperature, the fixed blade following the HP steam path extraction has also to be modified. Without this additional modification, the final feedwater temperature would reduce by approximately 1°F.

With these changes to HP stage 1 and 6 fixed blades, the expected throttle flow of Unit 1 (assuming similar as-made nozzle sizes to Unit 2) would be $6,985,456 \times 0.99 = 6,915,600 \text{ lb/h}$.

This itinerary was sent to you courtesy of Worldspan's My Trip And More. Click on the link below to display the itinerary.

Comments from Evelyn Warnick/ Thomas Travel

Click here to view itinerary

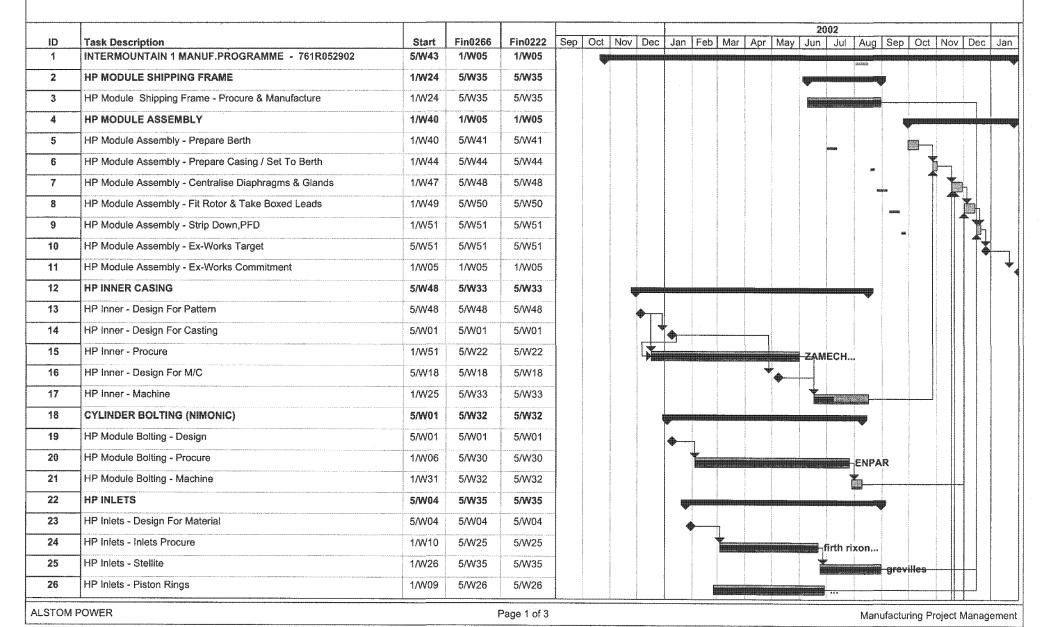
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)	Task Description	Durn	Start	Finish	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	20 Jun	Jul	Aug	Sep	Г
, 3	HP DIAPHRAGM GLAND RINGS	23w	1/W09	5/W31	1		1100		OCHI	₩ W	14161	Apr	,	Juli	Jul	- Aug	_ Geb	1
4	HP Diaph Gland Seals - Procure	11w	1/W09	5/W19				THE PROPERTY OF THE PROPERTY O		F		(4		 		ALL DESIGNATION OF THE PROPERTY OF THE PROPERT	100 A AAAA	
	HP Diaph Gland Seals - Machine	7w	1/W25	5/W31	1000			and decomposition of the second				The second of th	Total Control Control	+		44444	of dependent of a company of a	
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	HP Rotor - Design For Forging	0w	5/W43	5/W43	and the state of t	4	-		<u></u>			The country of the co	The state of the s			Andreas and Andreas		
	HP Rotor - Design For Gashing	0w	5/W04	5/W04	and the state of t				+							A confirmation and a confirmatio		
	HP Rotor - Procure Forging	22w	1/W48	5/W17	- Constitution		尾										A Company of the Comp	
	HP Rotor - Design For M/C	0w	5/W08	5/W08	100000000000000000000000000000000000000		Address of the second	Activities process		•						- m - m		
	HP Rotor - Pre-Blade Machine	5w	1/W22	5/W26			10 mm	Opportunities of the second				THE PARTY OF THE P	+		<u> </u>	Andreas Tilledering	and the second s	
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	HP Rotor - Turn Shroud.Deburr	3w	1/W36	5/W38	100			An included the second of the				A property of the second of th			4			
	HP Rotor - Overspeed & PFD	1w	1/W39	5/W39				Shinks 20000 A				TO A PERSON NAMED AND A PERSON NAMED A PERSON NAMED AND A PERSON NAMED A PERSON NAMED AND A PERSON NAMED	T T A A A A A A A A A A A A A A A A A A				Y	
	HP MOVING BLADES	39.2w	5/W46	5/W33							•••							a grant talken and a
_	HP Moving Blades - Design For Procure - Wt & Spec	0w	5/W46	5/W46			•	1				-	NATION OF THE PARTY OF T		Management (11) 111		Market Strangers	
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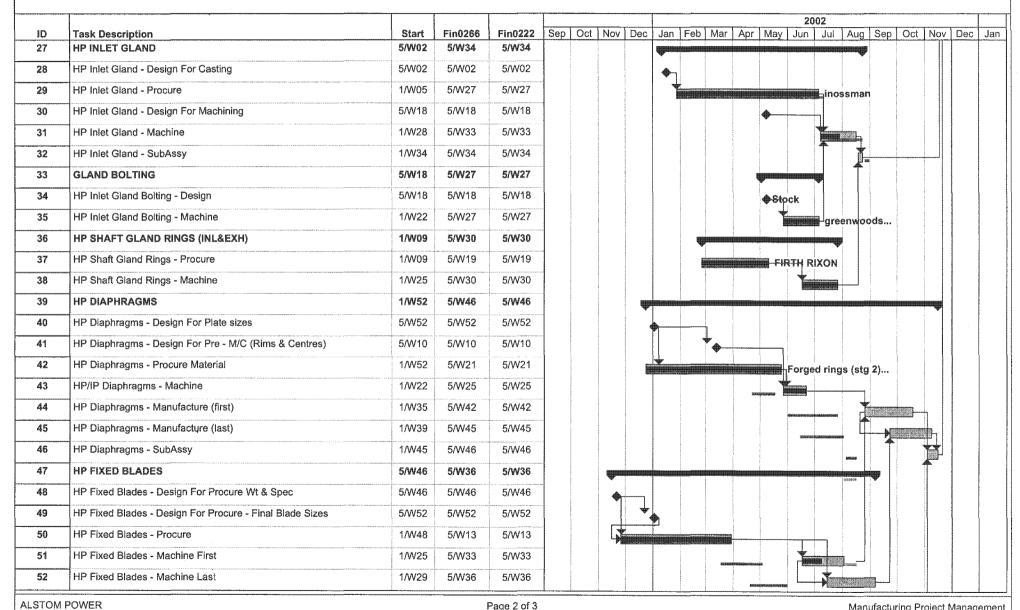
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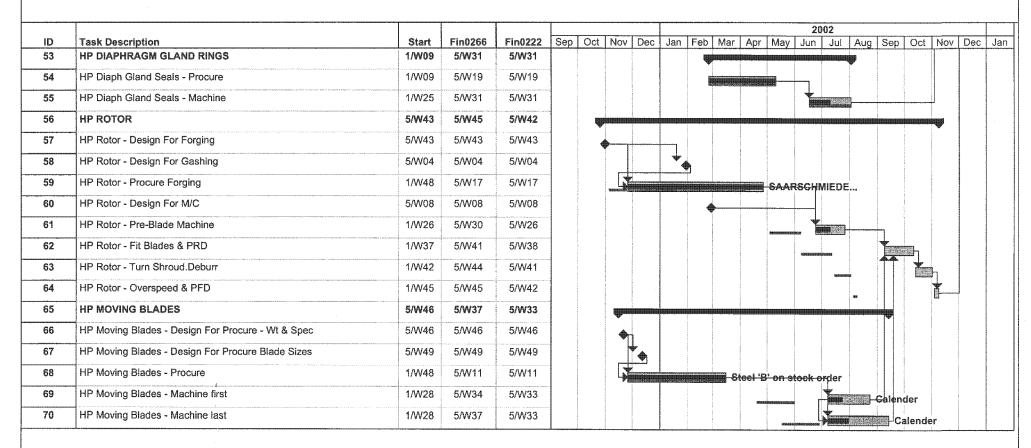


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INTERMOUNTAIN UNIT 1 MANUFACTURING PROGRAMME

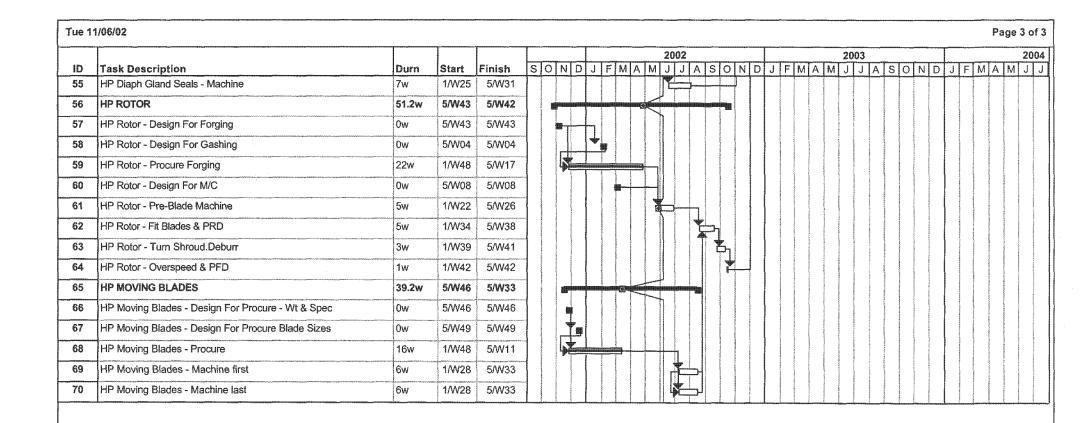


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12	HP INNER CASING	37.2w	5/W48	5/W33			-			-		4		•	History Hermanistra	- Properties		NAMAMAMAMA	***************************************	AND		-	earne-projection and the second	operation consistent	OBCOOLSOODS	Acceptance of the Especial		distribution of	and the entropy	ACCUSED OF ACCUSED		
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16	HP Inner - Design For M/C	Ow	5/W18	5/W18	***	No.	SEALANDON CONTRACTOR		descriptions of the		₩.		CONTRACTOR OF THE PARTY OF THE	- Chicamonocomics	i e	and the second		MONTHLY INC. INC. INC. INC. INC. INC. INC. INC.	7.000			and decimand the second	00-00-00-00-00-0		AND THE PERSON NAMED IN	THE REAL PROPERTY OF THE PERSON NAMED IN COLUMN 1			ilalah jijda deres	***************************************		
17	HP Inner - Machine	9w	1/W25	5/W33			A h-seminimization		-	***************************************	en successive	1		- +		Sharanan		WOODWANNERSON OF THE PERSON OF					or representation and a	***	dicerence code				Philippinesses	BISCORPORT S		
18	CYLINDER BOLTING (NIMONIC)	31.2w	5/W01	5/W32			AND THE PERSON NAMED IN		-	+		-	-			Concentration		Water and Belliams And				Private Line Company C	- Wildely State of the State of		and a second second	West of the second		10000	меренения	***************************************		
19	HP Module Bolting - Design	Ow	5/W01	5/W01	-		ALC: MATERIAL PARTY OF THE PART		- Appropriate (France)	Section 1	in the forest contraction of the second	and the second		DESCRIPTION AND SECTION		2000		MANAGEMENT AND	a care a		000 A 100 A	***************************************	Maria Caraca Colonia		CGMC-Management	· O A CONTRACTOR OF THE CONTRA			en de la constitución de la cons	- Contraction of the Contraction	***************************************	
20	HP Module Bolting - Procure	24.95w	1/W06	5/W30			MANAGEMENT AL ANAMAGEMENT	1				⊭	— h	ACTION AND COMPANY		40 ADA SERVICE ROSE OF THE SERVICE ADDRESS OF		WAYN SPINISHMAN						***************************************	Strategy of the strategy	PART TO SERVICE STATE OF SERVICE STATE STATE OF SERVICE STATE STATE OF SERVICE STATE S			Manufacture and American	200000000000000000000000000000000000000	ALACA MATERIAL STATE OF THE STA	
21	HP Module Bolting - Machine	2w	1/W31	5/W32			ACTION IN A CAMPATORISM		-	Orango company states	r fendingaga fundaga	0.000	7	7	-	0000		MARCICAL A VACIONA		on the second	****	***************************************	Programme and other		Carried and a second	COLUMN TO THE PERSON TO THE PE			THE REAL PROPERTY.	enconcorrent.	***************************************	
22	HP INLETS	31.2w	5/W04	5/W35			WAY AND		-	-		-		-		***************************************		THE COLUMN THE COLUMN					CALCULATION OF STREET		energy control				Ohenheelee	a.cocommonosono		
23	HP Inlets - Design For Material	Ow	5/W04	5/W04	-		ANAMESCA MAGOO	•	-	escontant de la contraction de	almartic Marketinis	CONTRIBUTION	intervenient der	THE RESIDENCE AND A SECOND		-		TORNOUS AND					roder commercia	***************************************		O PERSONAL PROPERTY.			With the second	on according		
24	HP Inlets - Inlets Procure	16w	1/W10	5/W25			ACCESSORY OF ACCESSES.		*			₩-	and the same	*AND THE STREET		-		ATRIAL DESIGNATION OF							Decrease sections	Chennel II To the second			certificación	NACOUSTI ESSENTI		
25	HP Inlets - Stellite	10w	1/W26	5/W35			ACCOMPANY TO THE PERSON OF THE		***************************************	and the second second	activities (Assessed	4		=	+-	000000		- AMBRICATA A - PP va		and district photos	BOOK STATE OF STATE O	a management of the second	0.00	***	Dr. Anneadad Calabara	MANAGER PROPERTY.		diameter (A LOS ABOLISMS	OMEGO: OP N	***************************************	
26	HP Inlets - Piston Rings	18w	1/W09	5/W26			PROMOVED DE SAUM		Ė	-	+		Н	AAAAA	-	NA COMMON	4	Annapoles des Blass	accessory of the second	A CONTRACTOR DESCRIPTION OF THE PERSON OF TH	add-tulable	was de la companya de	moderate to 1	Management	TREVESCO CONTRACTOR	CASSISTANA		and Committee	Hechinosee	000000000000000000000000000000000000000		
27	HP INLET GLAND	32.2w	5/W02	5/W34			WATER CONTRACTOR OF THE PERSON CONTRACTOR CO									Acceptance of the control of the con		a a a significado	Santana Cara	earth to the	hill/wast	and distance of	2	***************************************	COLUMN TO THE PERSON NAMED IN COLUMN	TALY THROUGH CA.			NAC MANAGEMENT	***************************************		

ALSTOM

Intermountain unit 1 Manufacturing Programme

			T	T	T		Т				2	002				Т					2003	3				T				2
ID	Task Description	Durn	Start	Finish	SI	ON	DJ	F	М	A N			A I	s o	N	D	J F	М	Α				S	0 1	V D	J	FIN	ИΑ	М	
28	HP Inlet Gland - Design For Casting	0w	5/W02	5/W02			1			Challenger							- Andrews										ASSESSA MAGE			-
29	HP Inlet Gland - Procure	23w	1/W05	5/W27			,	4		4	#	—	1	e-constant of the			Complete Carrier	***************************************	a constant of the color	MINISTER CHARGE	deli la despertado	n dilamana di d		And the state of t	No.	2000	монтирования	***************************************	000000000000000000000000000000000000000	The section of the section of
30	HP Inlet Gland - Design For Machining	0w	5/W18	5/W18						•	╬	+	Open Control of the C	100000000000000000000000000000000000000			ALTERNATIVE PROPERTY.	***************************************			organis beginned and states	e-shipping and an annual state of the state	200000000000000000000000000000000000000	A THE PERSON NAMED IN		() () () () () () () () () () () () () (ACADAMET STRANGEROOM	0.000		Tarabana da de la composición dela composición de la composición de la composición dela composición de la composición dela composición dela composición de la composición dela composición del composición dela composición dela composición dela composición dela composición dela composición dela composi
31	HP Inlet Gland - Machine	6w	1/W28	5/W33	-			and the same of th		hethores	0.000	生	-	000000000000000000000000000000000000000				WALL ST TAKEN	Annual Market	A PROPERTY OF	NAMES OF TAXABLE PARTY.	Appendix open property	AND THE PARTY OF T	A PARTY OF THE PAR			CONTRACTOR			·
32	HP Inlet Gland - SubAssy	1w	1/W34	5/W34		1000			-	Made (Street) (Street)	0.000	T	*	-	ᆀ		Annual Ann	-		ACTOR CHARGE		er so de labilitación des	A THE COMMENSAGE					-	to the second se	THE RESIDENCE OF THE PARTY OF T
33	GLAND BOLTING	9.2w	5/W18	5/W27							┿.	-	T	economica a			and the second	and the second	-	Adheritonhol								-	escusional and an annual and an annual annua	· sadd Adding die
34	HP Inlet Gland Bolting - Design	0w	5/W18	5/W18		MACAGE PARA AGE			de de de la constante de la co	-	16 0	ck		A A A A A A A A A A A A A A A A A A A			Microsoft Address of the			ALCOHOLOGY STATE	Co- Land Comment		917030400000				300000	000000000000000000000000000000000000000	special designation by	· olohunaanan
35	HP Inlet Gland Bolting - Machine	6w	1/W22	5/W27							#	ا لۈ	and the second	The second secon			der to the state of the state o	Live Section 1		Conference account.	Avenue avenue	and the same of th					and the second	***************************************	CALCIDATION	Table Medical
36	HP SHAFT GLAND RINGS (INL&EXH)	22w	1/W09	5/W30						(1)	\leftarrow	-		Ministration or other			The state of the s	MOVE TO A STATE OF THE STATE OF	or and	Accessed to the Control	- Anna Marian	***************************************	D. S.	and the second			WWA.MEERS.MAN	***************************************		The section of the se
37	HP Shaft Gland Rings - Procure	11w	1/W09	5/W19		-		E		.	+	e encional Property		editor-room	or a second		Of the World States	manage of the state	2000		and the latest and th	on many participation of the	CONTRACTOR OF	and the special section of the secti			CONTRACTOR	The second second		· was and walled
38	HP Shaft Gland Rings - Machine	6w	1/W25	5/W30	- distance de la companie de la comp				No.	***************************************	4		1	WALKE STATE OF THE	and the latest to the latest t		TO ALAE MISTO AMERICAN		ALCOHOLD A CONTROL			ALCOHOLOGICA	Section and section as	A AAA CASSAA AAA			and the same of	SCHOOL STATE		CACCUMOMORPHIC
39	HP DIAPHRAGMS	47w	1/W52	5/W46			+			-	-			+	+			Andrew Control of the		No.		Action () () () () () () () () () (SAMPLE AND THE SAME				000000000000000000000000000000000000000		do della consensa	* AMAZICIANA A
40	HP Diaphragms - Design For Plate sizes	0w	5/W52	5/W52	11	Andrews and the second	-			SCHOOL PROPERTY	Out and the second			Constanting of the Constanting o			AMERICAN AND A PERSON	and the same of th		or recognizations to	And Shakers	Market data to the second						-	M. Carrie Colonia	GENERAL AND SERVICES
41	HP Diaphragms - Design For Pre - M/C (Rims & Centres)	0w	5/W10	5/W10	11	45 100000		4	-	+	Tana Sheddel		***************************************	WATER FLANCE			of every bosoning as			et et transferie	- Control of the Cont	- vero commence of the commenc	ALD, ARLANDON					and a second	Adaption of the same	"Gib. Arrest Annua
42	HP Diaphragms - Procure Material	22w	1/W52	5/W21			#					NANCERONAL ACTION	- new part of the second	ALABATA ALABATA				Andread control of the control of th		WARRING CONTRACTOR							MINISTRACTOR	TANK BACKER TANK	delatine bit see	*************
43	HP/IP Diaphragms - Machine	4w	1/W22	5/W25						meren various	#	4		No constitution of the					- CONTRACTOR CONTRACTOR	Control of the Contro	Commence		Proposition and the second	CONTRACTOR AND AND	and the second of the second		-	***************************************		SALASAN TENNAN
44	HP Diaphragms - Manufacture (first)	8w	1/W35	5/W42		***************************************				edelika sport sport ik			書	-			-		ACT			SA-AMAGERICA - AMAGERICA - AMA	- Annual Company	OTHER PROPERTY.				- AND		WASHING MANAGES
45	HP Diaphragms - Manufacture (last)	7w	1/W39	5/W45				A PACIFICATION AND A STATE OF THE STATE OF T	i.	o constitution of the cons	0.000		Щ	Ł	╬╢		MANAGEMENT OF THE PERSON OF TH	and the second	MCBCMAn a description	-	7000000	Aggregate disconnections	CHEMICAL SATISFIES				CHARLES A SAME	N. P. C. SERVICE CO.		- CATACOLOGICA DATA
46	HP Diaphragms - SubAssy	2w	1/W45	5/W46		Ship and the same of the same					Carried Franchisco	Projection and the second			世		tering edition of			- Anna Commence	*		* 131770.000000				Section Control	THE PERSON NAMED IN	Mich (summary)	mega.allicona.a.a.
47	HP FIXED BLADES	42.2w	5/W46	5/W36		æ	-		-	\leftarrow			2007	West Control of the	T		- Aller of the State of the Sta			a pro-			6.6				. Department of control	-	to the second se	- servedentimen
48	HP Fixed Blades - Design For Procure Wt & Spec	0w	5/W46	5/W46		-	\vdash			and the state of t		The state of the s	Andrew States				A THE COUNTY IN			ann ann ann	PROBLEM BY COLOR	and		and a contract of the			100000	DESIGNATION OF THE PERSON OF T	appear in consists	WANTED TO THE
49	HP Fixed Blades - Design For Procure - Final Blade Sizes	0w	5/W52	5/W52			샠			uesodowiczono		ACTION AND ACTION ACTION AND ACTION ACTION ACTION AND ACTION ACTIO		TO STATE OF THE ST	data data da		THE STATE STATE OF SALES	-	(AAA)	- CONTRACTOR OF THE PERSON		NA TORNAL AND A BANK	AND A COLUMN TO SERVICE AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE	ere and and an inches				000000000000000000000000000000000000000		envanter/Wilden
50	HP Fixed Blades - Procure	18w	1/W48	5/W13		N N			_	- Company	-	4		**************************************			ALERON ALABAMET A.,	The state of the s	The Publisher of the Pu	ON PROPERTY AND ADMINISTRATION OF THE PERSON WHEN THE PERSON W	A Parish and Company of the Company	Maria en en en					COOKING CONTRACTOR	The second second		· CANADADADA ANOMA
51	HP Fixed Blades - Machine First	8.95w	1/W25	5/W33				Canada Salara		NOT THE PROPERTY OF	H	4	الي	REMOVED AND A STATE OF THE STAT			And all the selections of the selections of the selection	The state of the s		threshold and these	T-real and the State of State		#December con-				- City Michigan	TOTAL DESIGNATION OF THE PERSON OF THE PERSO	Minister community.	**ABVATATATATA
52	HP Fixed Blades - Machine Last	8w	1/W29	5/W36	1			A CONTRACTOR OF STATE OF		defet consiste no	Name and Delivery	本	\Rightarrow]	and the same of th		Anthre institute	A de colonomia de la colonia d	-	VASCHEETSTAMAGE	De Talent Lande	-					Barris March	-	Observation of the last	· sharinganana
53	HP DIAPHRAGM GLAND RINGS	23w	1/W09	5/W31						(2)	4			Oliver Contraction			Andrew Construction of	* AND THE PROPERTY OF THE PROP		Management	Vindenskilluft Litter		1.7100000000000000000000000000000000000	off a cheromore	and the second second		perfit, Miller Species 4		And the second s	- vonestores
54	HP Diaph Gland Seals - Procure	11w	1/W09	5/W19		Campadinanan					T	- Company Transport	A. C.	DOWN HEREN			quagraphic distribution (per	Name of the last o	Andrews of the Park	BANDOOM TOTAL	Ultimate de de la constitución d	***	NAME AND DESCRIPTIONS	and the Allegan	-	1	20 HAMMAN	SAMPLY SECU	TUTOR COMMENT	· · · · · · · · · · · · · · · · · · ·



From:

<wally.falconer@power.alstom.com>

To:

"Phong Do" < PHONG-D@ipsc.com>

Date:

4/9/03 2:07AM

Subject:

Intermountain Unit 1 HP replant - checklist (1)

Hello Phong

As promised I am forwarding a copy of the checklist in unapproved form. The formal copy will arrive in due course. Because the file sizes are quite large I am sending it in two separate emails. (Sections 2,6,7,8 & index)

(See attached file: 6HP-RBUS.pdf) (See attached file: CL_INDEX.pdf)

Hope you are enjoying getting to know your family again ! I know I am.

Best regards, Wally

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.



CUSTOMER SERVICE TECHNICAL SERVICE SECTION

CHECKLIST REFERENCE NO.

1175

CONTRACT:

INTERMOUNTAIN

UNIT NUMBER:

1

ST NUMBER:

11246

COMPLETED COPY

SECTIONS 1 - 9

THE ENCLOSED DOCUMENTS FORM A RECORD OF MEASUREMENTS TAKEN DURING STRIPDOWN / REBUILD OF THE MACHINE IDENTIFIED ABOVE



CUSTOMER SERVICE TECHNICAL SERVICE SECTION

CHECKLIST REFERENCE NO.

1175

CONTRACT: INTERMOUNTAIN

UNIT NUMBER: 1

ST NUMBER: 11246

Signed:_____ for Stripdown
Signed:_____ for Rebuild

THE ENCLOSED DOCUMENTS FORM A RECORD OF MEASUREMENTS TAKEN DURING STRIPDOWN / REBUILD OF THE MACHINE IDENTIFIED ABOVE



CUSTOMER SERVICE TECHNICAL SERVICE SECTION

CHECKLIST SECTION INDEX

Checklist No. 1175

SECTION	TITLE
1	QUALITY PLAN
	TURBINE STRIPDOWN
2	HP CYLINDER
3	COUPLINGS AND PEDESTALS
4	Not used
	TURBINE REBUILD
	1 O Cam I Cam In Chains and O Cam Inc
5	HP CYLINDER WORKS BUILD
6	HP CYLINDER SITE BUILD
7	HP CYLINDER MACHINING DATA
8	COUPLINGS

			cici	D 011 A	LITV DI	AN DA	3E 4 of 4					<u></u>	
PL	AN TYPE: OVERHA	AUL REPLANT	CONTI	RACT PLA	N No: IM/01/0 IE: INTERMO No: 1	01	PREPAR ISSUE D. REVISIO	ATE	: FE	BRU	ARY		
API	PROVAL REFERENCE ABBREVIATIONS	CE A = Approv	oint	C = C	opy of docum -process che- urveillance			E = E	xam lotify	ine c	ert./d	document ss for test nspn/document	
NO	TE : Prior to commencer	ment of any section of t	he following Field	Quality Plan,	reference docum		nce standards, id	ientifi	ed in d	olum	ns 6 &	k 7, must be verified	as the
NO.	COMPONENT/ACTIVITY	REQUIREMENT	TYPE OF CHECK	QUANTITY	REFERENCE	ACCEPTANCE	RECORD		AGE	NCY		REMARKS	DWG
				OF CHECK	DOCUMENT	STANDARD	FORMAT	SUB	ALST	CUST			REV
1	TURBINE CHECKLIST (STRIPDOWN AND REBUILD)	CLEARANCE CHECKS	MEASUREMENT	100%	N/A	MACHINE DRAWINGS	CHECKLIST REF No. 1175		X I S	С		SECTIONS 2 to 9	
					***************************************		annere se se se se a se a se a se						

QC 001

CHECK SHEET ISSUE STATUS AND COMPLETION RECORD

CONTRACT INTERMOUNTAIN UNIT NO: 1 ST NO: 11246

CHECKLIST NO: 1175

SECTION NO: 6 TITLE: HP CYLINDER - REBUILD

Sheet 1 of 2

PAGE NO	SHEET NO	DESCRIPTION	ISSUE	TS ENGR
6.1	HP20/001	HP Rotor bumping clearance and axial datums	A	
6.2	HP20/026	HP Inner cylinder to rotor axial datums - unboxed	Α	
6.3	HP20/027	HP Inner & Outer cylinder/rotor radial datums - unboxed	А	
6.4	HP20/009	HP Inner cylinder/rotor radial datums - boxed	A	
6.5	HP20/018	HP/IP Rotor to casing vertical datums unboxed	A	***************************************
6.6	HP20/013	HP rotor to Front pedestal axial datum	A	
6.7	PD15/008	HP Rotor to Thrust pedestal axial datum	А	
6.8/6.9	HP11/036	HP Disc & diaphragm axial & radial clearances (2 Sheets)	A	
6.10	HP11/035	HP Rotor spill strip to shrouding clearances	A	
6.11	HP02/005	HP Shaft end gland clearances - box A Front	A	wayo waa aa waa aa waa aa waa aa waa aa waa aa
6.12	HP02/005	HP Exhaust shaft gland clearances - box B Front	A	
6.13	HP02/005	HP Shaft cylinder gland clearances - box D Rear	A	
6.14	HP02/005	HP Shaft end gland clearances - box E Rear	A	n 1886 illin kalikula kalikul
6.15	HP/CL2	HP Shaft gland box axial clearances - FRONT	А	
6.16	HP/CL1	HP Shaft gland box axial clearances - REAR	A	
6.17	HP05/007	HP Exhaust end gland 'B' carrier key clearances	A	
6.18	HP08/001	HP Gland box to cylinder half joint steps - boxes A, B, C & E	А	
6.19	HP24/028	HP Inner/Outer cyl half joint steps, axial & side datums	А	***************************************
6.20/6.22	PD09/002	HP Rotor radial bore readings	A	
6.23	HP02/011	HP Gland bore and joint gap checks - boxes A, B, D & E	А	
6.24	HP01/001	HP Shaft Gland Ring Butt Clearances	А	

QC 001

CHECK SHEET ISSUE STATUS AND COMPLETION RECORD

CONTRACT INTERMOUNTAIN UNIT NO: 1 ST NO: 11246

CHECKLIST NO: 1175

SECTION NO: 6 TITLE: HP CYLINDER - REBUILD

PAGE NO	SHEET NO	DESCRIPTION	ISSUE	TS ENGR
6.25	HP/CL3	HP Gland axial & radial mismatch - boxes A, D & E	А	
6.26	HP24/024	HP Outer cylinder joint gaps unbolted	Α	
6.27	HP27/015	HP Steam inlet clearances	A	
6.28	HP27/019	HP Heater connection assembly	А	
6.29	HP27/020	HP Heater connection flange clearances	A	MANA I GOMATOO DA GODO
6.30	HP27/019	HP leak off for IP rotor cooling connection assembly	A	
6.31-32	HP26/008	HP Inner to outer cylinder key clearances (2 Sheets)	А	
6.33	HP28/002	HP inner to outer cylinder baffle clearances	A	
6.34-35	HP23/010	HP Cylinder Thrust key and paw grip clearances (2 Shts)	A	
6.36	HP23/005	HP Cylinder Thrust key & support packer thicknesses	A	
6.37	HP21/003	HP Cylinder to pedestal centre line key clearances	<u>A</u>	
6.38	HP25/001	HP Cylinder component bolts - torque settings	A	
6.39-40	HP25/002	Controlled tightening of HP Inner cylinder bolts (2 Sheets)	A	essanorianoriana vivonalirina abdessa
6.41-43	HP16/007	HP outer shell distortion correction factors - laser measurement	Α	
6.44	HP18/001	HP Inner cylinder final box-up checks	А	
6.45	HP18/001	HP Outer cylinder final box-up checks	Α	
	14400110001100011000110001100011			

Sheet 2 of 2

RECORD SHEET HP20/001

Page No.

6.1

Title	HP/IP ROTOR	BUMPING CLEA	RANCE & A	XIAL COL	D DATUMS	
Contract	INTERMOUNT	AIN	Unit No.	1	Serial No.	11246
Site Issue	A	Date 21/3/02	Checked	Ві	Check List No.	1175
Taken by MLS/BG	Date 19/3/03	Supervisor MLS/BG	Date 19/3/03	Approved		Date

Readings in inches

SHAFT IDENTIFICATION No.:	RF 113218

CYLINDER CONDITION	UNBOXED	BOXED (inner cyl +B gland only available)
DATUM WITH ROTOR HARD TO FRONT	9.808	9.660
ROTOR EXPANDING CLEARANCE (DESIGN .175)	0.152	0.300
DATUM WITH ROTOR HARD TO REAR	10.082	10.166
ROTOR CONTRACTING CLEARANCE (DESIGN .165)	0.122	0.206
TOTAL FLOAT (DESIGN .340)	0.274	0.506

Contacting:- Unboxed - To the REAR - Gland ring D4 To the FRONT - Gland ring E2
Boxed - inner cylinder inlet gland 'C' expanding and contracting

EXTERNAL COLD DATUMS

		
FRONT-END THROWER TO GLAND	L.H.S.	N/A
	R.H.S.	N/A
REAR-END THROWER TO GLAND	L.H.S.	N/A
	R.H.S.	N/A

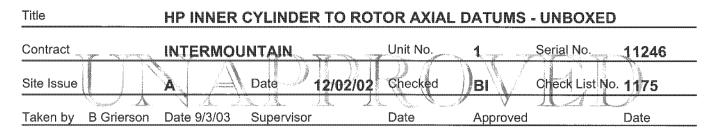
DISTANCE BETWEEN THE BACK FACE OF THE HP REAR COUPLING AND THE MIDDLE STANDARD, AT THE T2 BEARING HOUSING AXIAL LOCATION IN THE MIDDLE STANDARD	9.960 * (build working datum - see below for FINAL datum)
POSITION AT WHICH READING WAS TAKEN	LHS - just below half joint

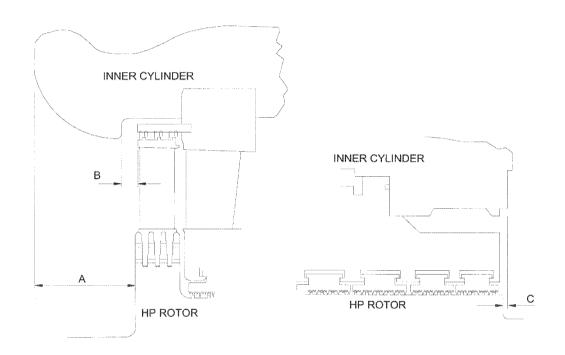
* FINAL AXIAL DATUM AFTER ADJUSTMENT FOR THE IP FINAL POSITION = 10.086" (24/3/2003)

RECORD SHEET HP20/026

Page No.

6.2





Readings in inches

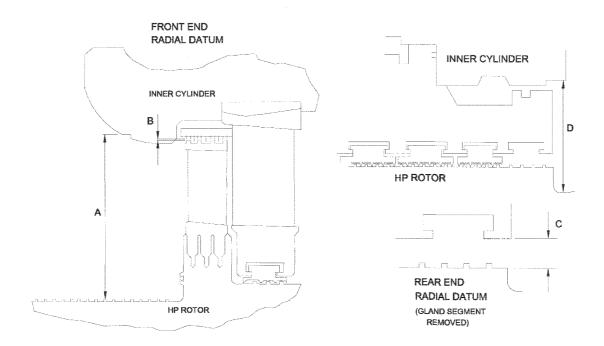
	FRC	NT A	FRO	NT B	REAR C		
	SHOP	SITE	SHOP	SITE	SHOP	SITE	
LHS	Model States Salvary		.507	.510	1.057	1.055	
вотт		No access at site		N/R		N/R	
RHS			.504	.506	1.055	1.051	

RECORD SHEET HP20/027

Page No.

6.3

Title	HP INNER CYLIND	ER/ROTOR RADIAL	<u>DATUMS - UNBO</u>	XED
Contract	INTERMOUNTAIN	Unit No.	1 Serial	No. 11246
Site Issue	A Date	12/02/02 Checked	BI Check	List No. 1175
		aller de aller		mathered desires. I
Taken by B Grierso	on Date 9/3/03 Supervis	or Date	Approved	Date



Readings in inches

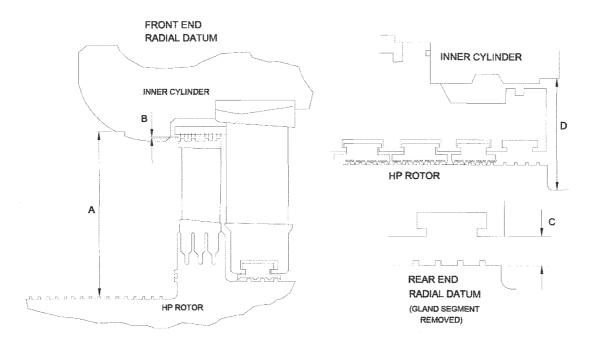
general de de la companya de la comp	FRONT A		FRONT A FRONT B		REAR C		REAR D	
	SHOP	SITE	SHOP	SITE	SHOP	SITE	SHOP	SITE
LHS			0.034	0.036	.707	.705	6.003	6.001
вотт		No access at site	0.028	No access	.700	No access	No access	No access
RHS	and an		0.034	0.032	.705	.708	6.002	6.004

RECORD SHEET HP20/009

Page No.

6.4

Title	HP INNER CYLINDER/ROT	OR RADIAL D	ATUMS -	BOXED	
Contract	INTERMOUNTAIN	Unit No.	1	Serial No.	11246
Site Issue	A Date 12/02/	02 Checked	в/ 🔪	Check List No.	1175
Taken by E	3 Grierson Date 20/3/03 Supervisor	Date	Approved		Date



Readings in inches

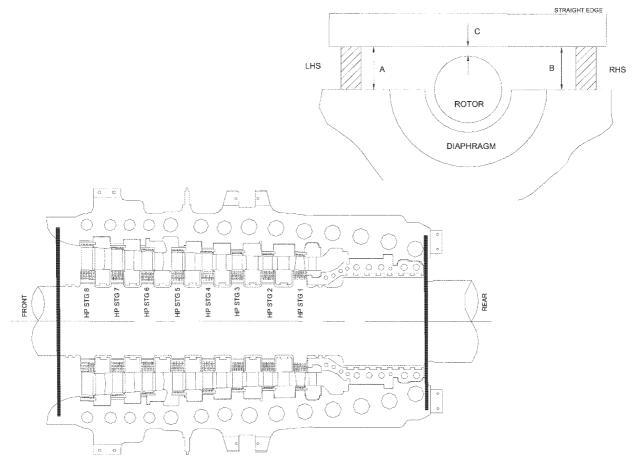
	FRONT A		FRONT B		REAR C		REAR D	
	SHOP	SITE	SHOP	SITE	SHOP	SITE	SHOP	SITE
LHS (BOTT)							6.003	6.001
BOTT		No access		No access	on ap ga	Not applicable		No access
RHS (BOTT)	# W.P.						6.002	6.004
TOP							6.012	6.006

RECORD SHEET HP20/018

Page No.

6.5

Title HP/IP ROTOR TO CASING VERTICAL DATUMS - UNBOXED								
Contract	INTERMOUNTAIN	Unit No. 1	Serial No. 11246					
Site Issue	A Date 12/02/02	2 Checked BI	Check Éist No. 1175					
		and the second s	V 23-21-21-21					
Taken IPSC	Date 19/3/03 Supervisor M Storey	Date 19/3/03 Appro	ved Date					



Note: Vertical datum measurement taken with rotor / gland bottom build clearances established and without any compensation for bolt up. Readings are with the outer cylinder on Build keys

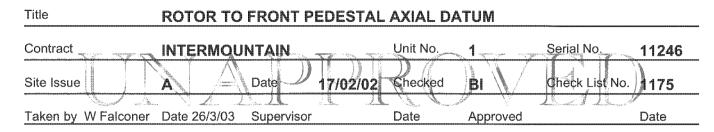
POSITION	А	В	С	*Works build adjusted	Difference Site/Works	Tops off/ Tops on Change
HP DIAPHRAGM St. 8	13.812	13.8115	1.9545	2.068	2.069	-0.008
HP INLET GLAND	14.813	14.8135	1.326	1.335	1.326	+ 0.005

^{*} Works build figures adjusted for difference in straight edge support block dimensions. Vertical error corrected by later adjustment on running keys

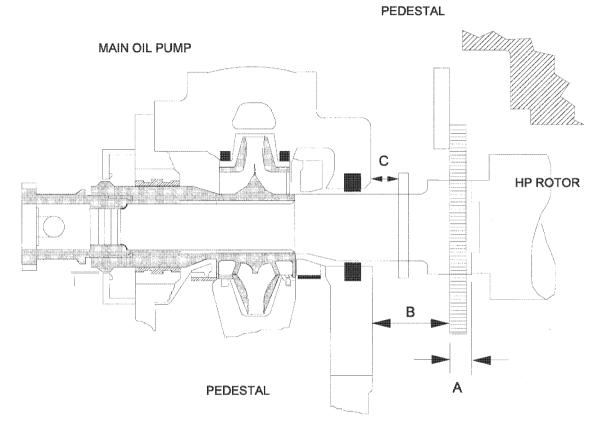
RECORD SHEET HP20/013

Page No.

6.6



NEW HP ROTOR



ROTOR IN COLD SET POSITION PUSHED TO FRONT

Readings in inches

DAT	TUM .	POSITION
А	N/A	
В	8.111	Pump casing to Wheel - LHS just below half joint
С	1.138	Pump casing to collar - LHS just below half joint

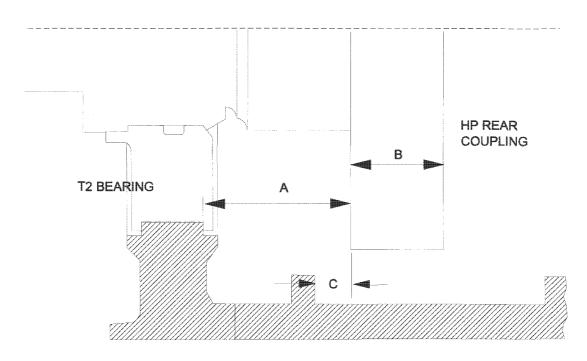
RECORD SHEET PD15/008

Page No.

6.7

Title HP ROTOR TO THRUST PEDESTAL AXIAL DATUM							
Contract	INTERM	OUNTAIN	Unit No.	<u> </u>	Serial No.	11246	
Site Issue	A	Date: 17/	02/02 Checked	BI	Check List No.	175	
Taken by	Date	Supervisor	Date	Approved	Land Daniel	Date	

HP ROTOR AXIAL DATUM IN THRUST PEDESTAL



ROTORS IN COLD SET POSITION PUSHED TO THE FRONT

Readings in inches

DATUM	NEW ROTOR	POSITION
Α	Working datum 9.960 FINAL datum 10.086	LHS
В	N/R	N/A
С	N/R	***************************************



RECORD SHEET

HP11/036 Sht 1

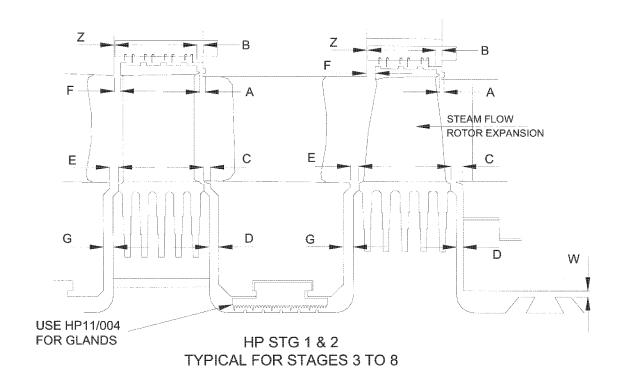
of 2

Page No.

6.8

Title **HP DIAPHRAGM & WHEEL CLEARANCES** Contract Unit No. Serial No. INTERMOUNTAIN 11246 Site Issue Date 17/02/02 Checked Check List No. BI 1175 Taken by Date Supervisor Date Approved Date

REF DRAWING: R277/1338 REV B



ALL AXIAL CLEARANCES TAKEN WITH ROTOR IN COLD SET POSITION.
MINIMUM CLEARANCE TO BE RECORDED.

RECORD SHEET HP11/036 Sht 2 of 2

Page No.

6.9

Title H.P. DIAPHRAGM & WHEEL CLEARANCES

Contract Unit No. INTERMOUNTAIN Serial No. 11246 Site Issue Date Checked Check List No. 17/02/02 BI 1175 Taken by As works build Date Supervisor Date Approved Date

REF DRAWING: R277/1338 REV B

ROTOR AXIAL DATUM = <u>9.960</u> (HP Coupling to T2 Bearing)

(F= Front End, R= Rear End)

Readings in inches

	BLADING S	STAGE	8	7	6	5	4	3	2	1
Α	DE	SIGN		.22	24		.221	.213	.197	.185
	ACTUAL	LHS		SEE WORKS BUILD SECTION 5 PAGE 8						
		RHS					THE PROPERTY AND ADDRESS OF THE PARTY AND ADDR			
В	DE	SIGN		.26	34		.260	.252	.236	.224
	ACTUAL	LHS		S	SEE WORK	S BUILD S	ECTION 5	PAGE 8		
		RHS						·	garagarai dobadonas y e e e e e	propremprimalizações
С	DĘ	SIGN	.2	:68	.287	.299	.295	.287	.283	.213
	ACTUAL	LHS		S	SEE WORK	KS BUILD S	ECTION 5	PAGE 8		
		RHS						· ·		
D	DE	SIGN	.3	43	.366	.378	.382	.37	74	.276
	ACTUAL	LHS	SEE WORKS BUILD SECTION 5 PAGE 8							
***************************************		RHS						4 /7	gas quantitative to the Manager	
Ε	DE	SIGN	.634	.496	.484	.472	.453	.429	.4	106
	ACTUAL	LHS	SEE WORKS BUILD SECTION 5 PAGE 8							
		RHS								
F	DE	SIGN	.500	.496	.484		.453	.429	.4	106
	ACTUAL	LHS			SEE	WORKS BI	JILD SECT	TION 5 PAC	GE 8	
~~~		RHS								
G	DE	SIGN	.823	.5	547	.524	.504	.480	,2	157
	ACTUAL	LHS	······································		SEE	WORKS BI	JILD SECT	TION 5 PAC	3E 8	
		RHS								
Z	DE	SIGN		.039		1.496		.03	19	
	ACTUAL	LHS		S	SEE WORK	KS BUILD S	SECTION 5	PAGE 8		
	<u> </u>	RHS								
W	DE	SIGN	'B	' GLAND DE	ESIGN = .4	27	'C' GLAND DESIGN = .315			
	ACTUAL	LHS	·	Not me	asured			SEE SEC	TION 5.8	TODIJASBIJASBIJASBIJAS
	<u></u>	RHS			1	,,,,,		ft		

RECORD SHEET HP11/035

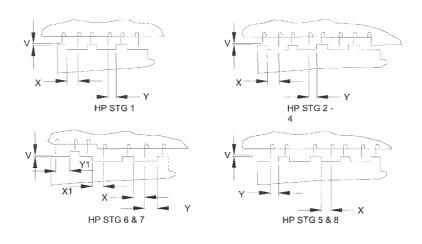
Page No.

6.10

Title **HP ROTOR SPILL STRIP TO SHROUDING CLEARANCES** Contract INTERMOUNTAIN Unit No. Serial No. 11246 Site Issue Date 17/02/02 Checked BI Check List No. 1175 Date Taken by As works build Supervisor Date Approved Date

REF DRAWING: R277/1338

**REV B** 



В	LADING S	TAGE	8	7	6	5	4	3	2	1		
	TOP	DES	.031	.030	.028	.028	.028	.028	.043	.028		
		ACT		See Section 5 Page 9								
V	вот	DES	.031	.030	.028	.028	.028	.028	.043	.028		
-		ACT				See Section	on 5 Page 9					
	DES	IGN	.031	.030	.028	.028	.028	.028	.043	.028		
	LHS	ACT		0001110011101		See Section	on 5 Page 9					
	RHS	ACT					н			_		
	DES	IGN	.244	.315	.354	.240	.240	.240	.220	.228		
Х	ACTUAL	LHS	See Section 5 Page 9									
		RHS					11					
	DES	IGN		.276	.236							
X1	ACTUAL	LHS	4444	See Section	n 5 Page 9	#1 40 AL 14	100 200 100					
		RHS										
	DES	SIGN	.476	.563	.610	.429	.421	.421	.385	.441		
Y	ACTUAL	LHS				See Section	on 5 Page 9					
		RHS				*	19					
	DES	SIGN	****	.488	.437				ting you may have			
Y1	ACTUAL	LHS	F24 Nov 400 300	See Section	n 5 Page 9			100 CA 107 CA				
		RHS		<u>Language</u>	11			~ ~ ~ ~ ~ ~	0. to 0. to	NO 60 NO EM		

#### RECORD SHEET HP02/005

Page No.

6.11

#### Title **HP SHAFT END GLAND CLEARANCES - BOX A FRONT** Unit No. Serial No. Contract INTERMOUNTAIN 11246 Site Issue Date Checked Check List No. 17/02/02 1175 Taken by BG/MLS Date March 03 Supervisor BG/MLS Date Mar 03 Approved Date REF DRAWING:- R277/1338 REV B ROTOR AXIAL DATUM = 9.960 STEAM FLOW (HP Coupling to T2 Bearing) TYPICAL GLAND PACKING RINGS ALL CLEARANCES TAKEN WITH ROTOR IN COLD SET POSITION. MINIMUM CLEARANCE TO BE RECORDED. SEGMENTS TO BE PUSHED IN RE RC DIRECTION OF STEAM FLOW. ROTOR EXPANSION

RE REDUCES WHEN ROTOR EXPANDS FASTER THAN CASING WITH THRUST AS FIXED DATUM.
RC REDUCES WHEN ROTOR CONTRACTS FASTER THAN CASING WITH THRUST AS FIXED DATUM.

LDOOLO WILL	INOTOR CONTINAC	TOTACTER THAN CACIN	IG WITH THRUST AS FIXED DATUM	1. Keadings III III
G	Column		A1 F	A2 R
	DESIGN		.550	.550
	LHL	IS	0.595	0.564
(-)	RH	is	0.595	0.564
	DES	IGN	.290	.290
	LH-	ls	0.264	0.280
(0)	RI	ls	0.248	0.280
	TOP	DES	.025	.025
		ACT	.038*	.037*
	вот	DES	.025	.025
M		ACT	.032**	.032**
	LHS	DES	.025	.025
		ACT	.020	.021
	RHS	DES	.025	.025
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		ACT	.024	.029
	DES	IGN		-
N	Lh	I S		
	R	-IS		
	DES	SIGN	<u></u>	
R	LH	ls	ionionen poor tarantaria en la constanta de la	
L	RI	-IS		

From top lead (uncorrected)

^{**} From tape-on-rotor check (uncorrected)

Taken by BG/MLS

RECORD SHEET HP02/005

Page No.

6.12

Date

Title HP EXHAUST SHAFT GLAND CLEARANCES - BOX B FRONT

Contract INTERMOUNTAIN Unit No. 1 Serial No. 11246

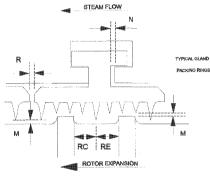
Site Issue A Date 17/02/02 Checked BI Check List No. 1175

REF DRAWING: - R277/1338 REV B

ROTOR AXIAL DATUM = 9.960

DateMar 03 Approved

(HP Coupling to T2 Bearing)



ALL CLEARANCES TAKEN WITH ROTOR IN COLD SET POSITION.

MINIMUM CLEARANCE TO BE RECORDED.

SEGMENTS TO BE PUSHED IN DIRECTION OF STEAM FLOW.

RE REDUCES WHEN ROTOR EXPANDS FASTER THAN CASING WITH THRUST AS FIXED DATUM.
RC REDUCES WHEN ROTOR CONTRACTS FASTER THAN CASING WITH THRUST AS FIXED DATUM

Date March 03 Supervisor BG/MLS

C REDUCES WA	HEN RUTUR C	UNTRACTS FAS	STER THAN CASIN	G WITH THRUST A	S FIXED DATUM.	red	adings in inch
GLA	ND RING N	10	B1	B2	B3	B4	B5
	DES	SIGN	.550	.550	.550	.550	.550
RE (L)	Lŀ	HS	0.564	0.564	0.579	0.579	0.579
(L)	R	HS	0.579	0.564	0.579	0.579	0.579
	DES	SIGN	.290	.290	.290	.290	.290
RC (0)	LI	HS	0.280	0.280	0.249	0.249	0.249
(0)	RI	HS	0.280	0.264	0.249	0.249	0.249
	TOP	DES	.020	.020	.020	.020	.020
		ACT	.022*	.023*	.023*	.024*	.023*
М	вот	DES	.020	.020	.020	.020	.020
		ACT	.018	.017	.016	.016	.017
	LHS	DES	.020	.020	.020	.020	.020
Doodings		ACT	.016/.016	.015/.015	.015/.014	.012/.011	.011/.011
Readings are Long	RHS	DES	.020	.020	.020	.020	.020
fin/short fin	5 ⁷⁷⁷⁷⁷	ACT	.019/.019	.0.021/.021	.023/.022	.021/.020	.020/.019
	DES	SIGN				<u></u> -	- Maria North
N	R	HS					
	DES	SIGN					
R	LHS						
Γ.	R	HS					

^{*} Top lead minus nominal TO/TO shift allowance

RECORD SHEET HP02/005

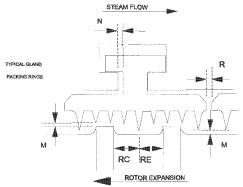
Page No.

6.13

Title **HP SHAFT CYLINDER GLAND CLEARANCES - BOX D REAR** Unit No. Contract Serial No. INTERMOUNTAIN 1 11246 Site Issue Date 17/02/02 Checked Βı Check List No. 1175 Taken by MLS/BG Date March 03 Supervisor MLS/BG Date Mar 03 Approved Date

REF DRAWING: - R277/1338 REV B

ROTOR AXIAL DATUM = 9.960
(HP Coupling to T2 Bearing)



ALL CLEARANCES TAKEN WITH ROTOR IN COLD SET POSITION.

MINIMUM CLEARANCE TO BE RECORDED.

SEGMENTS TO BE PUSHED IN DIRECTION OF STEAM FLOW.

RE REDUCES WHEN ROTOR EXPANDS FASTER THAN CASING WITH THRUST AS FIXED DATUM.

RC REDUCES WHEN ROTOR CONTRACTS FASTER THAN CASING WITH THRUST AS FIXED DATUM

REDUCES I	WHEN ROTOR CO	ONTRACTS FAS	TER THAN CASING WI	TH THRUST AS FIXED I	DATUM.	Readings in inches
G	LAND RING N	0.	D1	D2	D3	D4
	DESIGN		.180	.180	.180	.180
RE	LH	-IS	.165	.180	.165	.195
(L)	RI	-IS	.170	.193	.180	.182
	DES	SIGN	.170	.170	.170	.170
RC (O)	Lt	-IS	.135	.129	.135	.120
(0)	RI	HS	.142	.130	.143	.135
	TOP	DES	.020	.020	.020	.020
		ACT	_		-	ns.
М	ВОТ	DES	.020	.020	.020	.020
		ACT	.025	.030	.025	.025
	LHS	DES	.020	.020	.020	.020
		ACT	.020/.020	.019/.019	.020/.020	.016/.016
	RHS	DES	.020	.020	.020	.020
		ACT	.018/.019	.017/.017	.020/.018	.023/.023
	DES	SIGN			<u></u>	
N	LI	HS				
	R	HS				
	DES	SIGN				
R	LHS					
	R	HS				

Taken by MLS/BG

Title

RECORD SHEET HP02/005

Page No.

6.14

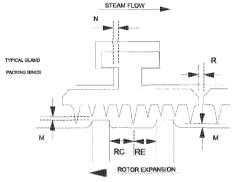
Date

HP SHAFT END GLAND CLEARANCES - BOX E REAR Unit No. Serial No. Contract INTERMOUNTAIN 11246 Check List No. Site Issue Date Checked ΒI 17/02/02 1175

Date Mar 03 Approved

REF DRAWING:- R277/1338 REV B

ROTOR AXIAL DATUM = (HP Coupling to T2 Bearing)



ALL CLEARANCES TAKEN WITH ROTOR IN COLD SET POSITION.

MINIMUM CLEARANCE TO BE RECORDED.

SEGMENTS TO BE PUSHED IN DIRECTION OF STEAM FLOW.

RE REDUCES WHEN ROTOR EXPANDS FASTER THAN CASING WITH THRUST AS FIXED DATUM. RC REDUCES WHEN ROTOR CONTRACTS FASTER THAN CASING WITH THRUST AS FIXED DATUM

Date March 03 Supervisor MLS/BG

REDUCES WHEN F	ROTOR CONTRACTS	-ASTER THAN CASING	WITH THRUST AS FIXED DATUM.	Readings in inche
G	SLAND RING NO.		E1	E2
	DES	BIGN	.175	.175
RE (L)	L	HS	.157	.157
(L)	R	HS	.157	.157
	DE	SIGN	.165	.165
RC (0)	L L	HS	.186	.186
(0)	R	HS	.186	.186
	TOP	DES	.025	.025
		ACT	.047*	.044*
М	вот	DES	.025	.025
	***************************************	ACT	.020**	.020**
	LHS	DES	.025	.025
		ACT	.025	.025
	RHS	DES	.025	.025
		ACT	.023	.025
	DE:	SIGN	**************************************	neg chica
Ν	L	HS		
14001400114001140011 <u>111141</u>	RHS			
	DE	SIGN		****
R	L	HS		
	R	HS		

^{*} Top lead (corrected for TO/TO shift)

^{**} From tape-on-rotor checks (corrected for TO/TO shift)

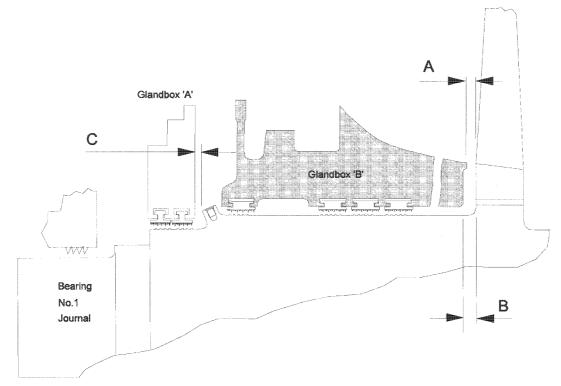
RECORD SHEET HP/CL2

Page No.

6.15

Title **HP SHAFT GLAND BOX AXIAL CLEARANCES - FRONT** Contract Unit No. Serial No. INTERMOUNTAIN 11246 Check List No. Site Issue Date Checked ΒI 17/02/02 1175 Taken by B Grierson Date 20/3/03 Approved Supervisor Date Date

REF DRAWING: - R217/A0/1338 Rev. B



ROTOR AXIAL DATUM = 9.960

(HP Coupling to T2 Bearing)

ROTOR IN THE COLD SET POSITION PUSHED TO FRONT Readings in inches

POSITION	A (RE)	B (RE)	C (RE)	
DESIGN	.634	.823	.820	
LHS	.612	Not recorded	.782	MINANIAANIAANIAANIAANIAANIAANIAANIAANIAA
RHS	.607	Not recorded	.783	

RE = ROTOR EXPANDING CLEARANCE

RC = ROTOR CONTRACTING CLEARANCE

RECORD SHEET HP/CL1

Page No.

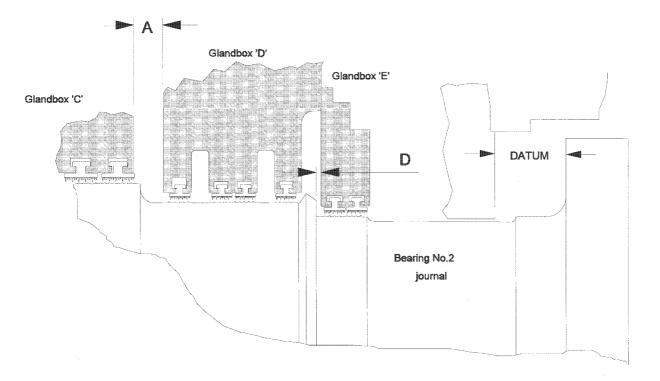
6.16

Date

Title **HP SHAFT GLAND BOX AXIAL CLEARANCES - REAR** Contract Unit No. Serial No. INTERMOUNTAIN 11246 Site Issue Date Checked Check List No. 17/02/02 ΒI 1175 Taken by B Grierson Date 20/3/03 Supervisor Date 20/3/03 Approved

BG

REF DRAWING:- R217/A0/1338 Rev. B



ROTOR AXIAL DATUM = 9.960

(HP Coupling to T2 Bearing)

ROTOR IN THE COLD SET POSITION PUSHED TO FRONT

Readings in inches

POSITION	А	B (RC)	C (RE)	D (RC)
DESIGN		N/A	N/A	1.054
LHS	3.250			1.091
RHS	3.250			1.097

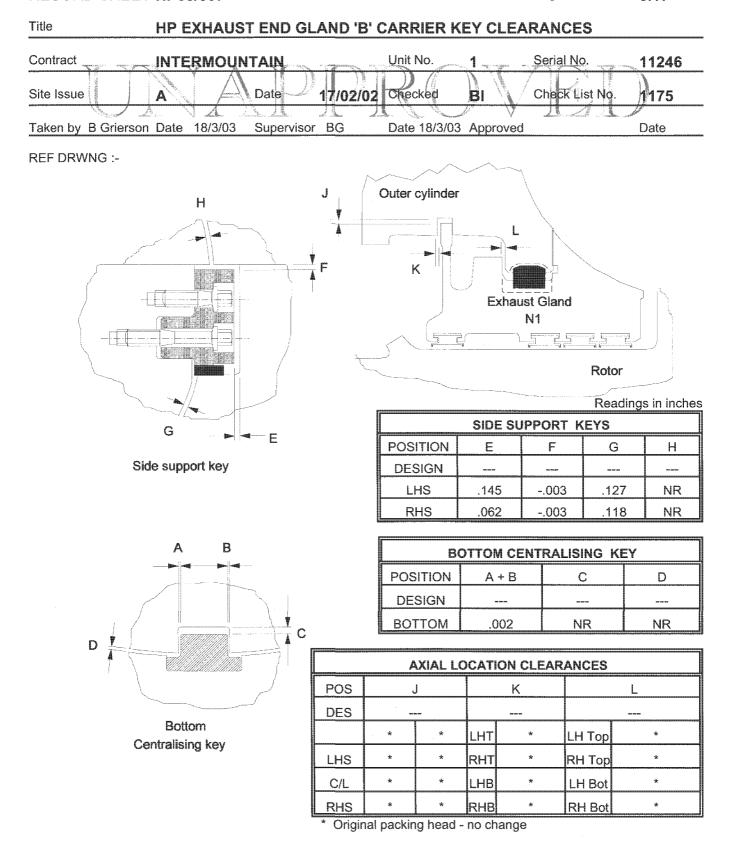
RE = ROTOR EXPANDING CLEARANCE

RC = ROTOR CONTRACTING CLEARANCE

RECORD SHEET HP05/007

Page No.

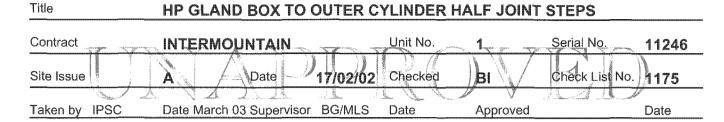
6.17

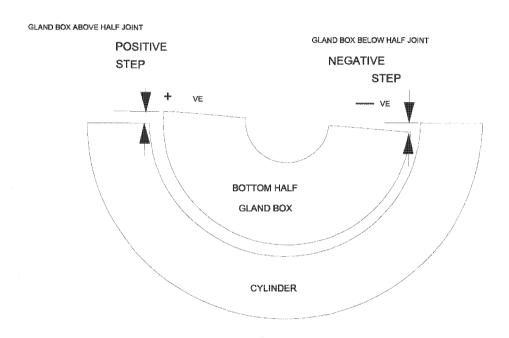


RECORD SHEET HP08/001

Page No.

6.18





POSITION AT WHICH READINGS ARE TAKEN TO BE MARKED 'X'

Readings in inches

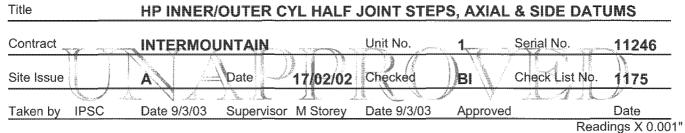
	BOLT ON GLAND BOX A FRONT CORNER	BOLT ON GLAND BOX A REAR CORNER	EXHAUST GLAND BOX B FRONT CORNER	EXHAUST GLAND BOX B REAR CORNER	BOLT ON GLAND BOX E FRONT CORNER	BOLT ON GLAND BOX E REAR CORNER
LHS	-0.010	N/A	+0.003	-0.001	N/A	+0.028
RHS	+0.005	N/A	+0.001	-0.000	N/A	-0.024

NOTE + SIGN TO INDICATE BUSH PROUD OF CYLINDER HALF JOINT - SIGN TO INDICATE BUSH BELOW CYLINDER HALF JOINT.

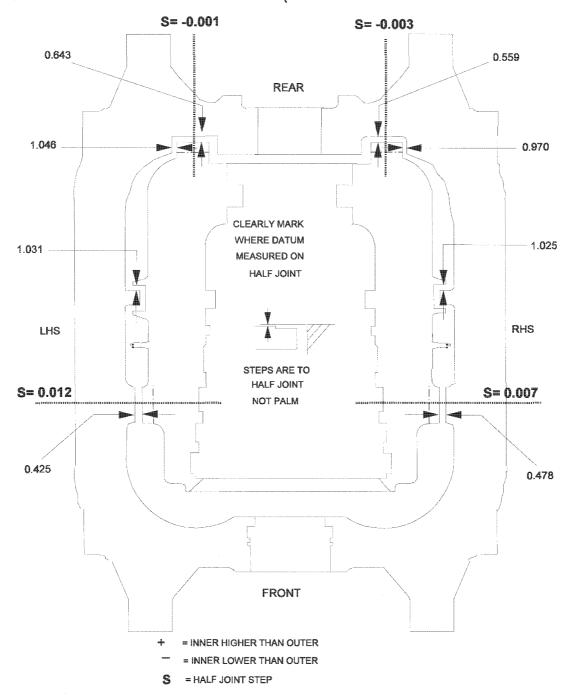
RECORD SHEET HP24/028

Page No.

6.19



ROTOR / T2 AXIAL DATUM 9.952" (Note Final axial datum selected = 9.960")



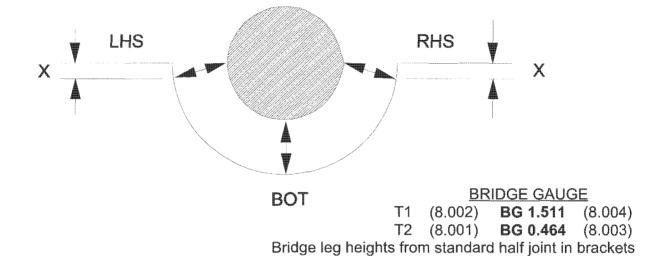
6 - HP REBUILD

RECORD SHEET PD09/002

Page No.

6.20

Title	HP ROTOR POSIT. RADIAL C	HKS - ON BUILDING I	KEYS UNBOXED
Contract	INTERMOUNTAIN	Unit No. 1	Serial No. 11246
Site Issue	A Date 12/02/02	©hecked BI	Check List No. 1175
Taken by IPSC	Date 17/3/03 Supervisor MLS	Date17-21Mar Approved	Date



DIMENSION X = FOR ALL SIDE DATUMS

Type Stamp Identification Letter on the Half Joints, in line with, and close to, the bore being measured from.

Readings in inches

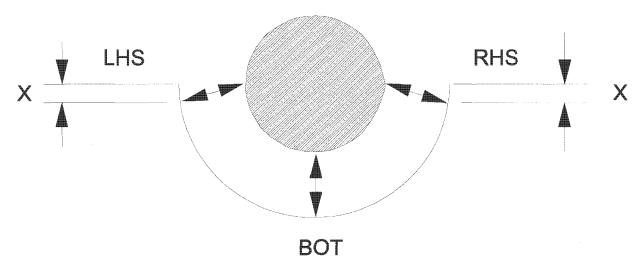
populación de la contractiva del la contractiva del la contractiva de la contractiva de la contractiva del	Readings in inches				
DATUM POSITION		UNBOXED DATUMS- ON BUILD KEYS - Rotor centred in brgs			COMMENTS
	AND	LHS	BOT/TOP	RHS	
T1 PEDESTAL BO	DRE	7.657	6.539	7.642	
FRONT BOLT-0N GLAND- SEG	FRONT BOLT-0N GLAND- SEGMENT REMOVED				
CYLINDER BORE - FRONT	TOP HALF	N/A	N/A	N/A	
	BOTT HALF		iga que sas pa-		
CYLINDER BORE - REAR	TOP HALF	N/A	N/A	N/A	
	BOTT HALF		use did did did		
REAR BOLT-ON GLAND- SEGI	0.8715	0.892	0.874		
T2 PEDESTAL BO	10.003	10.046	10.004	-	

RECORD SHEET PD09/002

Page No.

6.21

Title	HP ROTOR POSITION RAD	IAL- ON BUILDING K	EYS BOXED
Contract	INTERMOUNTAIN	Unit No. 1	Serial No. 11246
Site Issue	A Date 12/02	/02 Checked BI	Oheck List No. 1175
73			alemanian of and San San
Taken by B	Grierson Date 23/3/03 Supervisor	Date Approve	ed Date



DIMENSION X = FOR ALL SIDE DATUMS

Type Stamp Identification Letter on the Half Joints, in line with, and close to, the bore being measured from.

Readings in inches BOXED DATUMS- ON BUILD KEYS DATUM **POSITION** COMMENTS LHS BOT/TOP RHS T1 PEDESTAL BORE N/A N/A N/A FRONT BOLT-ON GLAND- SEGMENT REMOVED 0.881 N/R 0.885 CYLINDER BORE - FRONT TOP HALF 9.658 **BOTT HALF** N/A CYLINDER BORE - REAR TOP HALF 8.170 **BOTT HALF** N/A REAR BOLT-ON GLAND- SEGMENT REMOVED 0.875 N/R 0.882 T1 PEDESTAL BORE N/A N/A N/A

Rotor centred in bearings

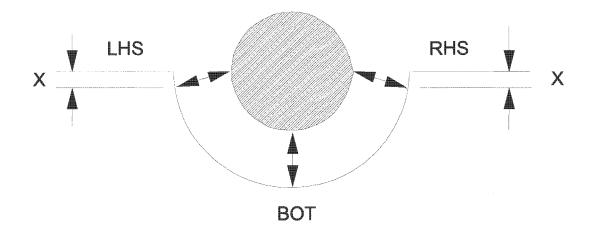
RECORD SHEET

PD09/002

Page No.

6.22

Title HP ROTOR POSITION RADIAL- ON RUNNING KEYS BOXED Contract INTERMOUNTAIN Unit No. Serial No. 11246 Site Issue Date Checked Check List No. 12/02/02 BI 1175 Date 26/3/03 Approved Taken by W Falconer Supervisor Date



DIMENSION X =

FOR ALL SIDE DATUMS

Type Stamp Identification Letter on the Half Joints, in line with, and close to, the bore being measured from.

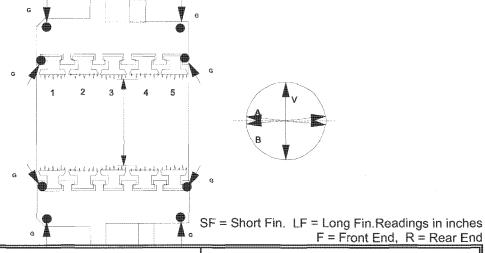
Readings in inches

DATUM POSITION		BOXED DATUMS- ON RUNNING KEYS			COMMENTS
		LHS	вот/тор	RHS	
T1 PEDESTAL BO	RE	N/A	N/A	N/A	
FRONT BOLT-0N GLAND- SEGI	FRONT BOLT-0N GLAND- SEGMENT REMOVED			0.883	
CYLINDER BORE - FRONT	TOP HALF	-	9.6595	-	
	BOTT HALF	-	N/A	æ	
CYLINDER BORE - REAR	TOP HALF	-	8.168	-	
BOTT HALF		-	N/A	-	
REAR BOLT-ON GLAND- SEGN	0.881		0.876	·	
T1 PEDESTAL BC	N/A	N/A	N/A		

Page No.

6.23

Title HP STEAM GLAND BORE CHECKS - BOXES 'A', 'B', 'D' & 'E' Contract Unit No. Serial No. INTERMOUNTAIN 1. 11246 17/02/02 Checked Check List No. Site Issue Date BI 1175 Taken by Date Supervisor Date Approved Date



-						F - FIORE ENG, IN - NE			TOOL FILE	
RING	REQUD			B0RE - X			HALF JOII	NT GAP -	G (0.001")
N0.	SIZE BOLTED	FIN	VERT	HORIZ	ONTAL		LH	IS	RI	-IS
			BORE - V	Α	В		OUTER	INNER	INNER	OUTER
A1	N/A	Bore	201100111700111100111111111111111111111			FRONT				
A2	N/A	Bore				REAR				
B1	N/A	Bore					***************************************			
B2	N/A	Bore					·			
В3	N/A	Bore		Not measured		REAR				
B4	N/A	Bore								
D1	N/A	Bore								
D2	N/A	Bore				FRONT				
D3	N/A	Bore		Not measured	REAR					
D4	N/A	Bore								
E1	N/A	Bore				FRONT				
E2	N/A	Bore				REAR				

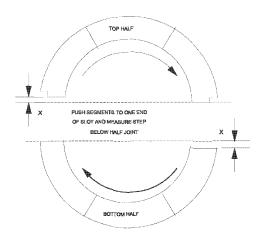
RECORD SHEET

HP01/001

Page No.

6.24

Title **GLAND RING BUTT CLEARANCE FOR HP SHAFT GLANDS** Unit No. Contract INTERMOUNTAIN Serial No. 11246 Site Issue Date 17/02/02 Checked BI Check List No. 1175 Taken by Date Supervisor Date Approved Date



IRRESPECTIVE OF THE NUMBER OF SEGMENTS BUTT CLEARANCE 'X' IS THE CUMULATIVE TOTAL OF ALL SEGMENTS IN EACH HALF RING

Readings in inches

				roddinge	s in inches
GLAND	RING		BUTT CLE	ARANCE 'X'	
POSITION	NUMBER	DESIGN		ACTUAL	
		TOTAL	TOP HALF	BOT HALF	TOTAL
'A'	1				
	2				·
	1				
'B'	2				
В	3				
	4				
	5				
	1				
'D'	2				
D	3				
	4				
'E'	1				
	2		10000000000000000000000000000000000000		
	, , , , , , , , , , , , , , , , , , ,				

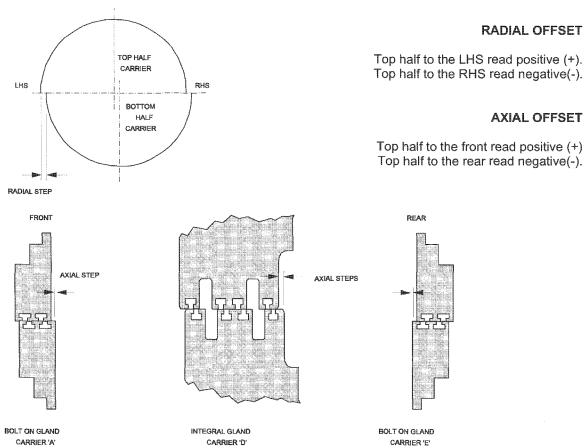
RECORD SHEET HP/CL3

Page No.

6.25

AXIAL OFFSET

Title HP GLANDBOX AXIAL AND RADIAL MISMATCH - BOXES 'A', 'D' & 'E' Contract Unit No. INTERMOUNTAIN Serial No. 11246 Check List No. Site Issue Date 17/02/02 Checked ВI 1175 Taken by Date Supervisor Date Approved Date RADIAL OFFSET



Readings in inches

Readings in inci								
POSITION	RADIAL STEPS		RADIAL STEPS		AXIAL	STEPS		
	LHS RHS		LHS	RHS				
Gland box 'A' Front	Refer to IPSC/Turbocare records		No significant mismatch					
Gland box 'A' Rear	n		n					
Gland box 'D' Front		n n		Ħ				
Gland box 'D' Rear	ar "		#					
Gland box 'E' Front	п		15			11		
Gland box 'E' Rear	п		ar " "		и			

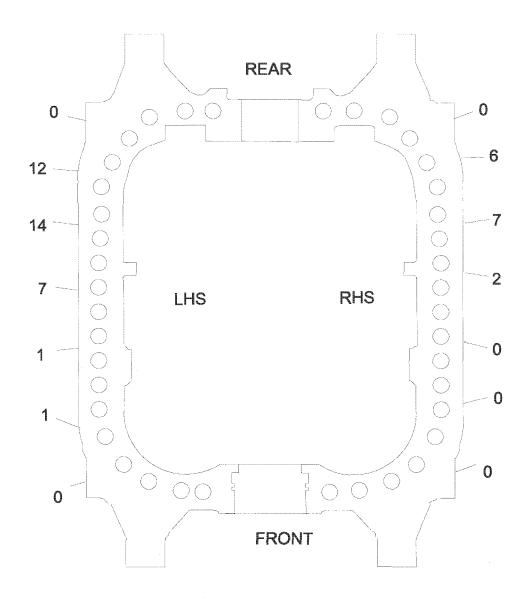
RECORD SHEET HP24/024

Page No.

6.26

Title	e HP OUTER CYLINDER JOINT GAPS - UNBOLTED									
Contract	INTERMOUNTAIN	Unit No. 1	Serial No11246							
Site Issue	A Date 7/0	2/02 Chedked BI	Check List No. 1175							
No.			1 Description							
Taken by IPSC	Date 3/3/03 Supervisor ML	S Approved	Date							

Readings are 0.001"



6 - HP REBUILD

RECORD SHEET HP27/015

Page No.

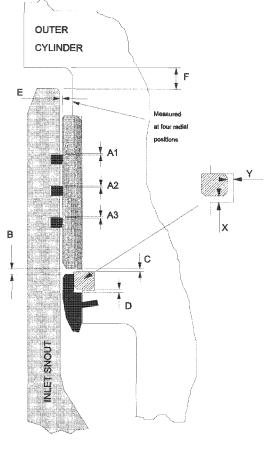
6.27

Title		HP ST	EAM INLETS C	LEARANC	ES	en e	***************************************	
Contract	21 3000	INTER	MOUNTAIN	not Areanded not it	Unit No.	1_,	Serial No.	11246
Site Issue		A	Date	13/3/02	Checked	ВІ	Gheck List No.	175
10013	Sand .	- Osman .		J. 2	and I have	7	15 17 11	
Taken by	CFS	Date 16	3/3/03 Superviso	r M Storey	Date 16/3/03	Approved		Date
		•	DEE DDA	14/11/100	D000140150	000	D000/40/E	

REF DRAWINGS :- R202/A0/5396 Rev. C, R202/A0/5387 Rev A

HP TURBINE INLETS DESIGN **POSITION** TOP TOP **BOTT BOTT** LHS **RHS** LHS RHS .020/.027 .022 .020 .021 **A1** .020 A2 .020/.027 .021 .020 .021 .021 .020/.027 .021 .020 .021 A3 .021 B* .035/.055 .048 .039 .048 .039 C* .006/.016 .006 .006 .008 .009 D* 0.024/.040 .030 .030 .030 .030 0.004/.008 .005 Х .006 .004 .005 0.008/.018 Υ .012 .013 .011 .011 E L/R min. .040 min. .114 .118 .113 .113 E F/R min. .080 min. .098 .085 .096 .073 Refer to HP/M16 &HP/M16A (p7.6-7) F* .315/.472 **DESIGN** SEALING RING RING 1 421 421 421 421 OVERLAP CLRC RING 2 .421 .421 421 .421 RING 3 .421 .421 .421 .421

Readings in inches



* Notes

1.Clearances 'B', 'C' & 'D' to be confirmed after machining components to suit dimensions measured on Record Sheets HP/M6 and M6A (Section 7).

2.Clearance 'F' derived from measurements on Record Sheets HP/M16 and M16A (Section 7)

RECORD SHEET

HP27/019

Page No.

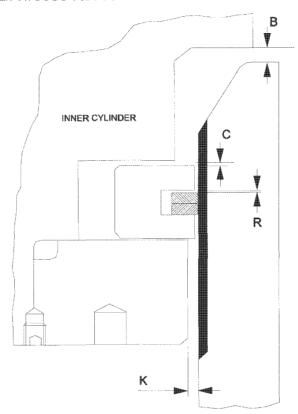
6.28

Title

HP HEATER CONNECTION ASSEMBLY

Unit No. Contract Serial No. 11246 INTERMOUNTAIN Checked Date 3/3/02 Check List No. Site Issue 1175 Date 16/3/03 Date16/3/03 Approved Taken by B Grierson Supervisor BG Date

REF DRAWING:- R202/A1/5380 Rev A



Readings in inches

	RAE	DIAL		AXIAL		
	L K C R				В	
DESIGN	N/A	.040/.438	.016/.024	.016/.028	.217/.413	
CARRIER L/R		.215 min	.020	.016	.315	
CARRIER F/R	Mar 400 CHI	.224 min	.020	.016	.315	

RING END CLRC	RING 1A	RING 1B	RING 2A	RING 2B
DES = .106/.118	Works as	sembled	N/A	N/A

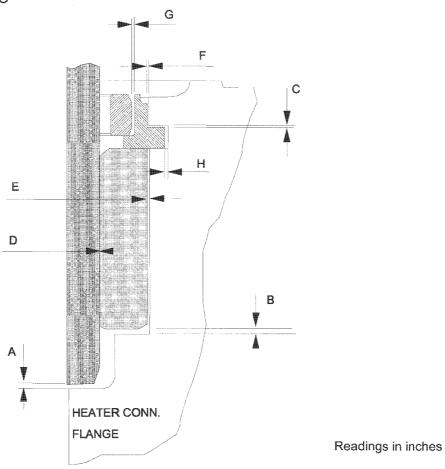
RECORD SHEET HP/M--

Page No.

6.29

Title	HP HEATER CONNECTION	ON FLANGE CLEARANCE	<u> </u>
Contract	INTERMOUNTAIN	Unit No. 1	Serial No. 11246
Site Issue	A Date 15/0	3/02 Checked BI	Gheck List No. 1175
Taken by	CFS Date 18/3/03 Supervisor	Date Approve	d Date

REF DWG:- R202/AO/5396 REV C



POSITION	А	В	С	D	E	F/G	Н
DESIGN	.039/.079	.015/.025	.010/.015	001/003	.001/.003	.0004/.004	.008/.018
ACTUAL	.050	.020	.013	001/.002	.003	.004	.015

Final length of spool =

RECORD SHEET

Site Issue

HP27/019

Date

Page No.

Check List No.

6.30

1175

Title HP LEAKOFF FOR IP ROTOR COOLING CONNECTION ASSEMBLY

Contract INTERMOUNTAIN Unit No. 1 Serial No. 11246

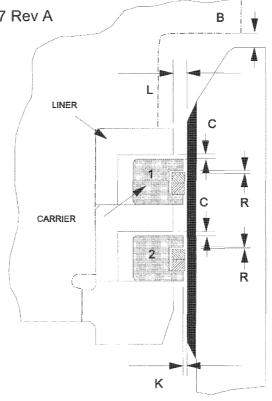
Taken by BG Date 16/3/03 Supervisor Date Approved Date

3/3/02

Checked

BI

REF DRAWING: - R202/A0/5397 Rev A



Readings in inches

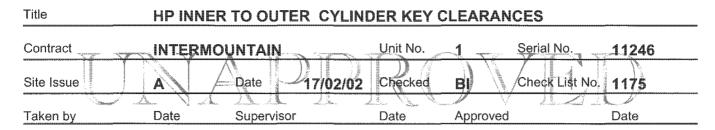
	RAE	DIAL	AXIAL				
		K	С	R	B		
DESIGN	.035/.279	0.020/.026	.024/.031	.017/.027	.472/.551		
CARRIER 1	L/R .130 min F/R .278 min	NR	Works fitted components .531				
CARRIER 2	"	NR		•			

		основного при				
RING END CLRC	RING 1A	RING 1B	RING 2A	RING 2B		
DES = 0.106/118	Works fitted components					

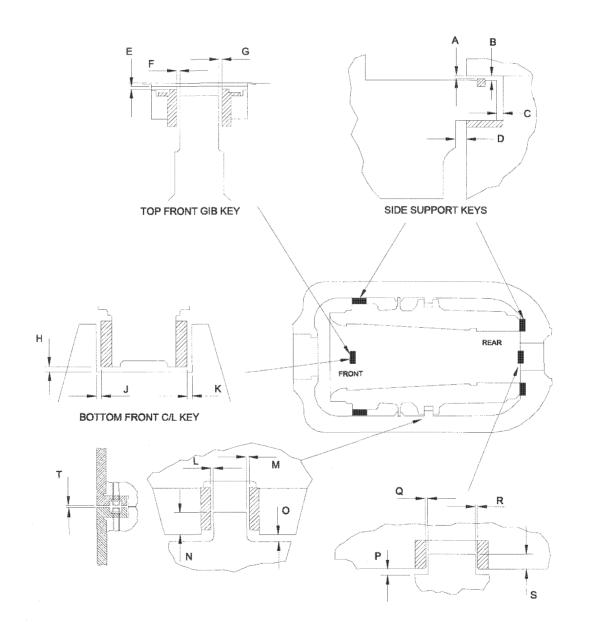
RECORD SHEET HP26/008 Sht 1 of 2

Page No.

6.31



REF DWG:- R202/AO/5396 REV C



6 - HP REBUILD

Page No. **6.32** RECORD SHEET HP26/008 Sht 2 of 2

Title HP INNER TO OUTER CYLINDER KEY CLEARANCES													
Contract	. ~~~	INT	ERMC	UNT	AIN.	al Semilar	Un	it No.	1	Se	rial No.	- Lucy	11246
Site Issue	The second second	A			Date Date	17/02/	02 Ch	ecked	ВІ	Cr	eck Lis	t No.	1175
Taken by V				******	*****************************	MLS/BC	3 Da	te Mar 03	Approv	red	Samuel I		Date
REF DWG:	KZ	02/AU	/5396	KEV							Re	ading	ıs in inches
		nanana kanana kina kiki kina kisi	******************		SIC	E SUPI	PORT K	ŒYS					
		ŀ	4			В))
	DE	SIGN	ACTU	JAL	DESIGN	ACT	UAL	DESIGN	ACT	UAL	DES	IGN	ACTUAL
FRONT LHS KEY	.00.	6/.008	.00	8	.031 MIN	.0	56	.250/.590	.4	24	.490/ ⁻	1.100	.810
FRONT RHS KEY			.00	8		.0	50		.4	80			.809
REAR LHS KEY	.00	6/.008	.00	8	.031 MIN	.0	42	.250/.590	.6	29	.490/ ⁻	1.100	.984
REAR RHS KEY			.00	6		.0:			.5	552			1.009
	Baassan vivan	n, and angles of the contract of the list de-	1444	F	RONT TRA	NSVER	SE LO	CATING KEY	/S				
TOP KE	Y		E		F+(<u> </u>	вот	TOM KEY		Н		-1-1-0-0-1-7-0001-00001	J.+ K
DESIG	<u>N</u>).	010/.030)	.004/.0	.004/.006		DESIGN .250/.40		00. 00		04/.006	
ACTUA	<u></u>		0.025		0.00	004 ACTUAL		CTUAL	375			.004	
	I		······································	ar podo obiotiva	AXI	AL LOC	ATING	KEYS	bidoobido <u>uuw</u>		1		
		L -	- М т			9		N		***********	T (Design=		.004/.027)
	DE	SIGN	ACTU	JAL	DESIGN	AC1	TUAL	DESIGN	ACT	UAL	POSIT	ΓΙΟΝ	ACTUAL
LHS TOP			NF	?		1	IR I			IR	LHF	ront	.024
RHS TOP	.00	4/.006	NF	₹	.250/.420		IR	1.000 MIN		IR	LHR	ear	.027
LHS BOT			.00	4		.8	04		2	.5	RHF	ront	.030
RHS BOT			.00	4		.7	'64		2	.5	RHF	Rear	.020
			***************************************	F	REAR TRAN	ISVERS	E LOC	ATING KEYS	S				
			F) 			C) + R			S		
		DES	IGN	Α	CTUAL	DES	SIGN	ACTUA	AL	DE	SIGN		ACTUAL
TOP		0.250			NR	004	-/.006	.006		4,000,1411		1.5	
BOTTOM		0.400	ivi/·\^		NR		1.000	.004	.004		1.000 MIN		1.5



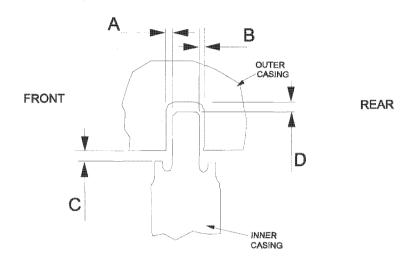
RECORD SHEET HP28/002

Page No.

6.33

Title	HP INNER TO OUTER CY	LINDER BAFFLE	E ASSEMBLY C	LEARANCES
Contract	INTERMOUNTAIN	Unit No.	1 Serial	No11246
Site Issue	Date 19/3	702 Checked	BI Check	List Np. 1175
Taken by B Grie	erson Date 18/3/03 Supervisor E	3G Date	Approved	Date

REF DWG :- R202(AO)5396 Sht 3 Rev C



INNER/OUTER CYLINDERS IN FINAL AXIAL RELATIONSHIP

Readings in inches

POSITION	DESIGN	BOTTOM HA	LF BAFFLE	*TOP HALF BAFFLE		
		LHS	RHS	LHS	RHS	
AXIAL - A	.039/.200	.125	.115	*	*	
AXIAL - B	.039/.200	.128	.138	*	*	
RADIAL - C	.160/.250	.129	.123	*	*	
RADIAL - D	.200/.275	.213	.212	*	*	

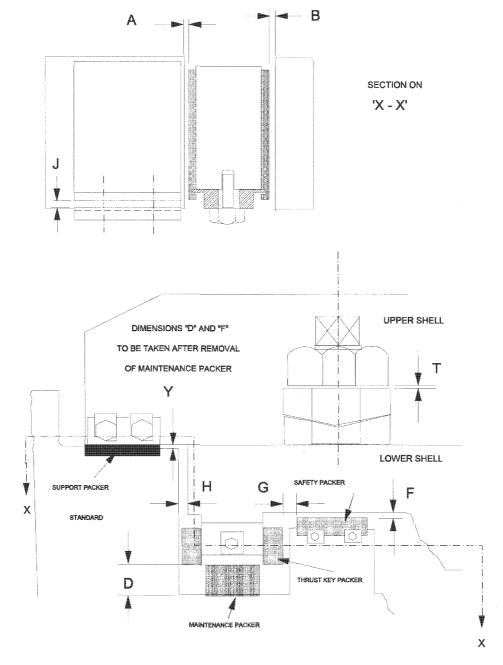
^{*} No significant steps between top and bottom halves

RECORD SHEET HP23/010 Sht 1 of 2

Page No.

6.34

Title	HP CYL	<u>INDER THRU</u>	ST KEY 8	LPAW GR	RIP CLEAR	RANCES	
Contract	INTERN	IOUNTAIN	- Sandansk M	Unit No.	same all markets in	Serial No. 11246	
Site Issue	A	Date	17/02/02	Checked	BI \\	Check List No. 1175	
San /	Y AS				reconstitution V		
Taken by	Date	Supervisor		Date	Approved	Date	



SIDE VIEW ON TYPICAL FRONT-END THRUST KEY

RECORD SHEET HP23/010 Sht 2 of 2

Page No. **6.35**

Contract	INTERMOUNTAIN	Unit No.	.1 S	erial No 11246
Site Issue		/02/02 Checked	ві	heck List No. 1175
San San		and the state of t	A V	
Taken by W Falc	coner Date 26/3/03 Supervisor	Date	Approved	Date

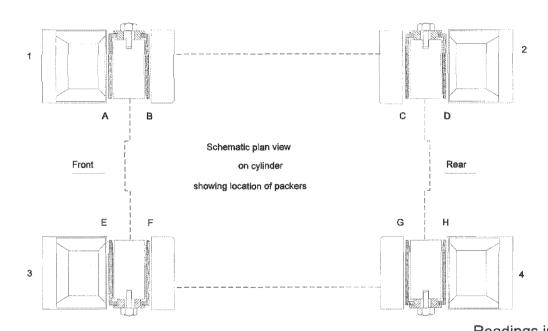
				Readings in inches	
THRU	JST KEY PACKER CLEARANCE	- "A+B" (TC	TAL)	DESIGN =	
CYLINDER	LH FRONT KEY		LH REAR KEY		
LHS	0.002		0.003		
CYLINDER	RH FRONT KEY	EMBRITANI EMBRITA DE ESCODESCESSO	R	H REAR KEY	
RHS	-0.002	0.002		_ 0.003	
TOP PALM TO	TOP PALM TO STANDARD CLEARANCE SAFETY PACKER SAF 'J' = CLEARANCE			SAFETY PACKER TO LOWER PALM CLEARANCE 'F'	
LH FRONT	NR_	Lh	H FRONT	0.063	
LH REAR	NR NR	L	H REAR	0.050	
RH FRONT	NR	RI	H FRONT	0.062	
RH REAR	NR	R	H REAR	0.050	
MAINTENAN	ICE PACKER GAP - 'D'		PALM TO STAN	DARD GAP - 'Y'	
LH FRONT KEY	LH REAR KEY	LH F	RONT KEY	LH REAR KEY	
1.015	1.043		0.293	0.323	
RH FRONT KEY	RH REAR KEY	RH F	RONT KEY	RH REAR KEY	
1 027	1 054		<u>0.295</u>	0.220	
	BOTTOM PALM TO STA	NDARD CLI	EARANCE - 'H'	Allege International Control of the	
LH FRONT KEY	0.572	LH	REAR KEY	0.478	
RH FRONT KEY	0.590	RH	REAR KEY	0.464	
	SAFETY PACKER TO THRUST	KEY PACK	ER CLEARANCE	- 'G'	
LH FRONT	0.352	L	H REAR	0.070	
RH FRONT	0.018	F	RH REAR	0.228	
www.	RETAINING BOL	T CLEARAN	CE - 'T'		
LH FRONT		L	H REAR		
RH FRONT		F	RH REAR		

RECORD SHEET HP23/005

Page No.

6.36

Title	HP CYLINDER THRUST KEY & SUPPORT PACKER THICKNESSES								
Contract	INTERI	MOUNTAIN	Unit No.	_1 {	Serial No.	_11246			
Site Issue	A	Date 17/)2/02 Checked	В	Check List No.	1175			
No.	/ 1/3 V 1		7 7 1	- V		Sandy Sandy			
Taken by	Date	Supervisor	Date	Approved		Date			



Readings in inches C В D THRUST KEY 1.100 0.642 As stripdown As stripdown PACKER **THICKNESSES** E F G Н 1.131 0.632 As stripdown As stripdown CYLINDER PAW LH FRONT LH REAR As stripdown As stripdown **KEY WIDTH RH FRONT** As stripdown **RH REAR** As stripdown LH FRONT LH REAR PEDESTAL KEYWAY As stripdown As stripdown WIDTH RH FRONT RH REAR As stripdown As stripdown LH REAR RH FRONT **RH REAR** SUPPORT PACKER LH FRONT **THICKNESS** 1.044 1.072 1.042 1.076 **TEMPORARY** LH FRONT As stripdown LH REAR As stripdown SUPPORT PACKER **RH FRONT** As stripdown RH REAR As stripdown **THICKNESS**

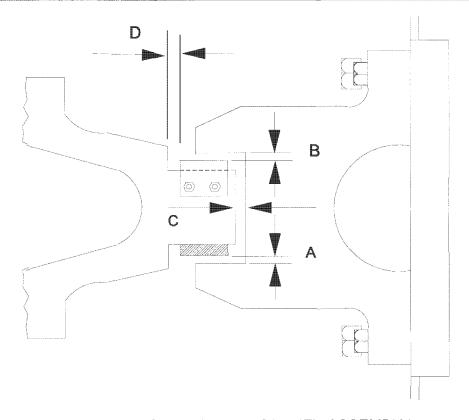
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RECORD SHEET HP21/003

Page No.

6.37

Title	HP CYLINDER TO PEDESTAL CENTRE LINE KEY CLEARANCES							
Contract	INTERMO	DUNTAIN	Unit No.	1 ~~~~~~	Serial No.	11246		
Site Issue	A	Date	7/02/02 Checked	Bı	Chéck List No.	1175		
Taken by	Date	Supervisor	Date	Approved	441	Date		



PLAN VIEW ON TYPICAL KEY ASSEMBLY

		(A :	(A +B)		С		D	
CYLINDER POSITION	KEY POSITION	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	
	TOP							
FRONT	ВОТТОМ							
	TOP							
REAR	воттом							

RECORD SHEET HP25/001

Page No.

6.38

Title	the HP CYLINDER COMPONENT BOLTS - TORQUE SETTINGS								
Contract	INTER	MOUNTAIN	en e	Unit No.	1 -	Serial No.	11246		
Site Issue	A	Date	17/0	2/02 Checked	B _I \	Chéck List No.	1175		
	/ A. V.		11.	1 1 1	and the Contract of the Contra	1:41	W. Carlotte		
Taken by	Date	Superv	isor	Date	Approved		Date		
Drawing Ref	. R212/A0/385	6 Rev A,	R265/A	0/9371 Rev A,	R265/A0/	9372 - 9378 Re	ev B		

				DES	SIGN	
LOCATION	ITEM NO.	QTY.	SIZE	Ft.Lb.	Nm	ACTUAL
HP INLET GLAND	3	4	21⁄4"-8UN -2A	3584	4859	
11	4	6	2"-8UN -2A	2580	3499	
ą I	5	6	1¼"-8UN -2A	608	824	
11	9	2	1"-8UN -2A	216	293	DE440-V4-V4-V4-V4-V4-V4-V4-V4-V4-V4-V4-V4-V4-
STAGE 1 DIAPHRAGM	12	2	5⁄8"-11UN -2A	51	70	
STAGE 2 DIAPHRAGM	12	2	1%"-8UN -2A	583	791	
BF CONTRACTOR OF THE CONTRACTO	13	2	1"-8UN -2A	216	293	
STAGE 3 DIAPHRAGM	12	2	1%"-8un -2A	583	791	
19	13	2	1"-8UN -2A	216	293	
STAGE 4 DIAPHRAGM	12	2	11/a"-8UN -2A	313	424	
**	13	2	1" 8UN -2A	216	293	
STAGE 5 DIAPHRAGM	- 12	2	11/a"-8UN -2A	313	424	
FF	13	2	1" 8UN -2A	216	293	
STAGE 6 DIAPHRAGM	12	2	11/s"-8UN -2A	313	424	
[]	13	2	1" 8UN -2A	216	293	
STAGE 7 DIAPHRAGM	12	2	11/8"-8UN -2A	313	424	

1" 8UN -2A

11/s"-8UN -2A

1" 8UN -2A

216

313

216

293

424

293

13

12

13

STAGE 7 DIAPHRAGM

2

2



RECORD SHEET HP25/002 Sht 1 of 2

Page No.

6.39

Title CONTROLLED TIGHTENING OF HP INNER CYLINDER BOLTS Contract Unit No. INTERMOUNTAIN. 11246 Site Issue Date Checked Check List No. 17/02/02 1175 Date 21/3/03 Supervisor M Storey Date 21/3/03 Approved Taken W Gasser Date JOINT BEING TIGHTENED: HP INNER CYLINDER HALF JOINT DRAWING REFERENCE : R200/A3/10344 METHOD OF TIGHTENING: HEATING

REAR (GENERATOR END)

Readings in inches

LHS FLANGE JOINT

RHS FLANGE JOINT

BOLT No.	MEASUF	REMENT	EXTE	VSION	BOLT No.	MEASU	REMENT	EXTE	NSION
INO.	BEFORE	AFTER	ACTUAL	DESIGN	NO.	BEFORE	AFTER	ACTUAL	DESIGN
11	.714	.739	0.025	.025/.031	12	.727	.752	0.025	.025/.031
23	.536	.580	0.044	.037/.045	24	.528	.573	0.045	.037/.045
7	.547	.592	0.045	.037/.045	8	.571	.612	0.041	.037/.045
19	.541	.583	0.042	.037/.045	20	.541	.579	0.038	.037/.045
3	.533	.571	0.038	.037/.045	4	.549	.588	0.039	.037/.045
15	.538	.579	0.041	.037/.045	16	.530	.571	0.041	.037/.045
1	.718	.749	0.031	.025/.031	2	.718	.749	0.031	.025/.031
17	.545	.578	0.033	.029/.035	18	.547	.578	0.031	.028/.035
5	.548	.580	0.032	.029/.035	6	.548	.578	0.030	.028/.035
21	.547	.576	0.029	.029/.035	22	.523	.556	0.033	.028/.035
27	.428	.459	0.031	.025/.031	28	.422	.453	0.031	.025/.031
9	.429	.461	0.032	.025/.031	10	.415	.446	0.031	.025/.031
25	.430	.460	0.030	.025/.031	26	.428	.453	0.025	.025/.031
13	.431	.458	0.027	.025/.031	14	.429	.460	0.031	.025/.031

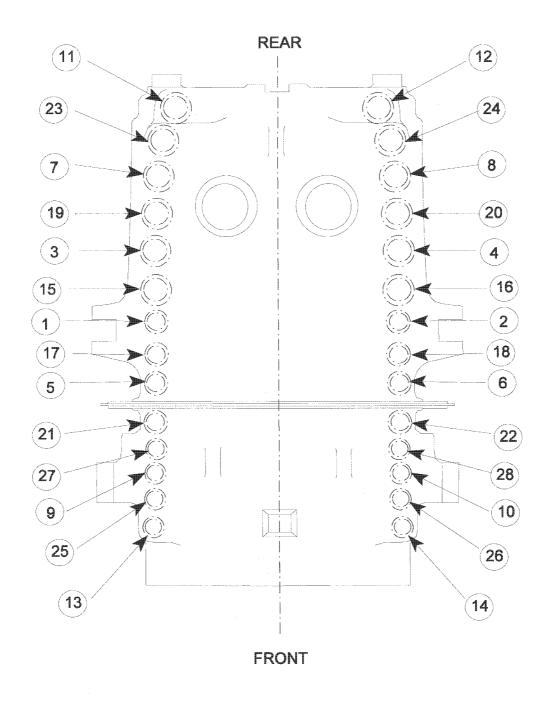
FRONT (TURBINE) END

THE IDENTIFICATION NUMBERS ARE MARKED ON THE STUDS AND NUTS

IT IS ESSENTIAL THAT THE STUDS ARE CHECKED AND RE-TIGHTENED PROGRESSIVELY.

RECORD SHEET HP25/002 Sht 2 of 2 Page No. 6.40

Title	itle TIGHTENING SEQUENCE FOR HP INNER CYLINDER BOLTS								
Contract	INTERN	OUNTAIN		Unit No.	1	Serial No.	11246		
Site Issue	A	Date D	17/02/02	Checked	В	Chéck List No.	1175		
Marin and the second	4 \ 4			T / J / J	<i>y</i>	Limited Liberton	7		
Taken by	Date	Supervisor		Date	Approved		Date		



6 - HP REBUILD

RECORD SHEET HP16/007 Sht 1of 3

Page No.

6.41

Title **HP OUTER SHELL DISTORTION MEASUREMENTS - LASER** Contract INTERMOUNTAIN Unit No. Serial No. 11246 Site Issue Date 5/3/03 Checked WHF Check List No. 175 Taken by M Morris LMS Date 12/3/03 Supervisor Date Approved Date

Readings referenced to outer cylinder (gland locations A2 and E2)

Note: For horizontal positive no. = Right

For vertical positive no. = Up

POSITION OF GLAND	HORIZONTAL TOPS OFF	HORIZONTAL TOPS ON	HORIZONTAL SHIFT	VERTICAL TOPS OFF	VERTICAL TOPS ON	VERTICAL SHIFT
T1 bore	0.023	0.024	0.002	0.012	0.009	-0.004
A1	0.003	0.004	0.001	0.006	0.004	-0.003
A2	0	0	0	0	0	0
B1	0.002	0.004	0.002	0.012	0.004	-0.008
B2/3	0.002	0	-0.002	0.018	0.004	-0.014
B5	0.002	-0.001	-0.003	0.026	0.008	-0.018
St 8	-0.006	-0.002	0.005	-0.004	-0.020	-0.016
St 2	-0.004	-0.003	0.001	-0.003	-0.016	-0.013
C1	0.002	0.002	0.001	-0.005	-0.017	-0.012
C7	0.002	0.001	-0.001	-0.006	-0.016	-0.010
D1	0	0	0	0.001	0	-0.001
D2/D3	-0.002	0002	0	0.006	0.005	-0,001
D4	-0.002	-0.002	0	0.011	0.008	-0.003
E2	0	0	0	0	0	0
T2 bore	0.005	0.004	0	016	-0.034	-0.018

RECORD SHEET HP16/007 Sht 2of 3

Page No.

6.42

Title **HP OUTER SHELL DISTORTION MEASUREMENTS - LASER** Contract Unit No. **INTERMOUNTAIN** Serial No. 11246 Site Issue Date 5/3/03 Checked Check List No. WHF 1175 Taken by M Morris LMS Date 12/3/03 Supervisor Date Approved Date

Readings referenced to the T1 -T2 rotor bearings boreline

horizontal positive no. = Right For vertical positive no. = Up

POSITION OF GLAND	HORIZONTAL TOPS OFF	HORIZONTAL TOPS ON	HORIZONTAL SHIFT	VERTICAL TOPS OFF	VERTICAL TOPS ON	VERTICAL SHIFT
T1 bore	0	0	0	0	0	0
A1	-0.020	-0.020	-0.001	-0.005	-0.004	0.002
A2	-0.022	-0.023	-0.002	-0.011	-0.006	0.005
B1	-0.020	-0.019	0	0.002	-0.002	-0.003
B2/3	-0.018	-0.022	-0.004	0.009	0.001	-0.008
B5	-0.018	-0.022	-0.004	0.020	0.008	-0.012
St 8	-0.024	-0.021	0.003	-0.009	-0.017	-0.008
St 2	-0.016	-0.016	0.001	0.001	0	-0.001
C1	-0.009	-0.009	0	0.002	0.003	0.001
C7	-0.007	-0.008	-0.001	0.005	0.010	0.005
D1	-0.008	-0.009	0	0.012	0.026	0.014
D2/D3	-0.010	-0.010	0	0.018	0.033	0.015
D4	-0.009	-0.009	0	0.024	0.037	0.013
E2	-0.006	-0.006	0	0.015	0.032	0.017
T2 bore	0	0	0	0	0	0

Taken by M Morris LMS Date 12/3/03

RECORD SHEET HP16/007 Sht 3of 3

Page No.

6.43

Date

Title HP OUTER SHELL DISTORTION MEASUREMENTS - LASER

Contract INTERMOUNTAIN Unit No. Serial No. 11246

Site Issue A Date 26/03/02 Checked BJ Check List No. 1175

HP final alignment corrections for tops on condition

Date

Approved

Note: For horizontal positive no. = Right For vertical positive no. = Up

Supervisor

					rtcaa	ings in inches
GLAND POSITION	IDEAL HORIZONTAL	IDEAL VERTICAL (excld'g ovality)	CORRECTED HORIZONTAL	CORRECTED VERTICAL	HORIZONTAL CORRECTION	ELEVATION CORRECTION
		MARKET CONTROL OF THE STATE OF				

A2	0	0	0	0	0	0
B1	0	-0.001	0.004	0.004	-0.004	-0.005
B2/3	0	-0.002	0	0.004	0	-0.006
B5	0	-0.003	-0.001	0.008	0.001	-0.011
St 8	0	-0.005	-0.002	-0.020	0.002	0.015
St 2	0	-0.006	-0.003	-0.016	0.003	0.010
C1	0	-0.005	0.002	-0.017	-0.002	0.012
C7	0	-0.003	0.001	-0.016	-0.001	0.013
D1	0	-0.002	0	0	. 0	-0.002
D2/D3	0	-0.001	-0.002	0.005	0.002	-0.006
D4	0	0	-0.002	0.008	0.002	-0.008
E2	0	0	0	0	0	0

Page No. **6.44**

Itle 	HP CYL	INDEK FIN	AL BUX-	UP CHECKS	- INNE	R CYLINDER	,/accontacentacentacentacentacentacentacentace
Contract	INTERM	OUNTAIN		Unit No.	1	Serial No.	11246
Site Issue	A	Date	/17/02/	2 Checked	BI	Check List No	1175
Taken by	Date	Supervi	sor	Date	Appro	ved	Date

THE FOLLOWING CHECKS ARE TO BE COMPLETED PRIOR TO FITTING THE TOP HALF INNER CYLINDER COVER

		INSPECTED BY	(SIGNATURE)
	CHECK	ALSTOM	IPSC
1	ALL RELEVANT CHECKSHEETS COMPLETED AND APPROVED	W Falconer	A TO THE PARTY OF
2	ROTOR UNBOXED BUMP CHECK COMPLETED	M.L. Storey	
3	ALL HORIZONTAL JOINTS CLEAN AND BURR FREE	B Grierson	
4	ALL GLAND ALIGNMENT KEYS AND DOWELS CORRECTLY FITTED	B Grierson	
5	ALL INTERNAL FITTINGS, PIPES, CLAMPS ETC FITTED	B Grierson	
6	ALL INSTRUMENTATION/CABLING FITTED WHERE APPLICABLE	N/A	
7	ALL FASTENERS LOCKED OFF TO THE REQUIRED STANDARD	B Grierson	
8	TV INSPECTION SATISFACTORILY COMPLETED	B Grierson	
9	ALL TEMPORARY ARRANGEMENTS USED TO PROTECT OPENINGS REMOVED	B Grierson	
10	WHERE CYLINDERS ARE TOP HALF SUPPORTED ENSURE THAT THE TEMPORARY SUPPORTS FOR THE BOTTOM HALF INNER CYLINDER ARE REMOVED	N/A	
11	ALL INTERNALS THOROUGHLY CLEAN	B Grierson	
12	CYLINDER BOXED-UP DATE	19 March '02	



RECORD SHEET HP18/001

Page No.

6.45

Title	HP CYLI	NDER FINA	L BOX-UI	P CHECK	S - OUTER	CYLINDER	
Contract	INTERMO	QUNTAIN		Unit No.	1	Serial No.	-11246
Site Issue	A	Date	17/02/02	Checked	BI /	Check List No.	1175
Taken by	Date	Supervisor	La La	Date	Approved	Answering Committee Committee	Date

THE FOLLOWING CHECKS ARE TO BE COMPLETED PRIOR TO FITTING THE TOP HALF OUTER CYLINDER COVER

		INSPECTED BY	(SIGNATURE)
BAGODII GODII (1971)	CHECK	ALSTOM	IPSC
1	ALL RELEVANT CHECKSHEETS COMPLETED AND APPROVED	W Falconer	7
2	ROTOR UNBOXED BUMP CHECK COMPLETED	B Grierson	
3	ALL HORIZONTAL JOINTS CLEAN AND BURR FREE	B Grierson	
4	ALL GLAND ALIGNMENT KEYS AND DOWELS CORRECTLY FITTED	B Grierson	
5	ALL INTERNAL FITTINGS, PIPES, CLAMPS ETC FITTED	B Grierson	
6	ALL INSTRUMENTATION/CABLING FITTED WHERE APPLICABLE	W Falconer	
7	ALL FASTENERS LOCKED OFF TO THE REQUIRED STANDARD	B Grierson	
8	TV INSPECTION SATISFACTORILY COMPLETED	B Grierson	
9	ALL TEMPORARY ARRANGEMENTS USED TO PROTECT OPENINGS REMOVED	B Grierson	
10	WHERE CYLINDERS ARE TOP HALF SUPPORTED ENSURE THAT THE TEMPORARY SUPPORTS FOR THE BOTTOM HALF INNER CYLINDER ARE REMOVED	B Grierson	
11	ALL INTERNALS THOROUGHLY CLEAN	B Grierson	
12	CYLINDER BOXED-UP DATE	22 March 2002	

UNAPPROVED

From:

<bill.eisma@power.alstom.com>

To: Date: <phong-d@ipsc.com>
6/17/2003 1:29:40 PM

Subject:

Delta 1. Customer Satisfaction

Phong,

I send the attached form with a letter dated May 2, 2003. This might have got lost somehow somewhere, I would therefore appreciate if you could take a couple of minutes to complete the attached and return it so we can enter your opinions into our data base.

Thanks,

Bill

(See attached file: Cust.Sat.Survey (after PAC).xls)

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From:

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date:

2/13/03 9:43AM

Subject:

Delta unit 1. US Vendors info.

Phong

details of the other guys.

I'll have to try and get approx dates off Wally.

Regards

Kevin

Laser Measurement Services Inc, 301 Montreal Street, Playa Del Ray, CA 90293

Mr. Martin J. Morris, Tel,: (310) 822-585, Fax: (310) 822-9394, E-mail: mmlms@attbi.com

FARO Arm Rental.

Edison ESI, 7300 Fenwick Lane, Westminster, CA 92683

Mr. Marco Parize, Tel.: (714) 895-0151, Fax: (714) 895-0298, E-mail: Marco.Parize@sce.com

New E-Control Cards Supply + Installation NovaTech., 328 South Link Lane Ste. 13, Fort Collins. CO 80524 Mr. Joe Hovorka, Tel.: (970) 224-2223, Fax: (970) 224-1700, E-mail: novatech@novatechcorp.net

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CERTIFICATE OF PLACING EQUIPMENT INTO SERVICE

Purchaser	:	Intermountain Power	Service	Corporation

Equipment: HP Steam Path Components for Delta unit 1 HP Retrofit.

Contract #: 01-45510 dated April 9, 2001.

The parties concerned in the above mentioned Contract hereby agree that the Equipment supplied by ALSTOM Power Inc. completed installation on 3/28/03, all Technical Field Assistance Services were rendered and all tests associated with the Installation were completed. The unit was available for Turning Gear Operation on 3/28/03 and initial electical synchronization occurred on 3/29/03.

Thereby, the full responsibility for operation, maintenance and insurance has been transferred to the Purchaser/Owner and the Equipment Warranty period per Article 1 - Warranty, in Part C - Division C2 page C2-1 of the above referenced Contract has started.

The Warranty Period for the HP Steam Path Equipment, referenced in the Warranty section of the Contract, will expire at the end of the following periods, whichever shall expire first;

24 Month from initial electrical synchronization which occurred on 3/29/03 at 23.00Hrs 36 Month from delivery of the Equipment which occurred on 2/11/03

In no event shall the warranty period, including extensions thereto applicable to any component of the Work, extend for more than 54 month from the delivery date or 48 month from initial synchronization date shown above, whichever period shall expire first

Date:		Date: 5/02/03				
For and on Intermounta	behalf of: ain Power Service Corporation.	For and on ALSTOM F				
Name	George W. Cross	Name	: Wim F. (Bill) Eisma			
Position	President & Chief Operations Officer	Position	: Director Retrofit Projects			
Signature	:	Signature	:.			

ALSTOM Power Inc. 2800 Waterford Lake Drive Midlothian, VA 23112

takocer.xls

From:

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date:

2/13/03 9:02AM

Subject:

Re: Security Info

Phong - Mike Jones will be there to measure IP.

Bill - Can you provide names / dates of novatech, laser & Faro guys please?

Kevin

----- Forwarded by Kevin SPIRES/GBRUG01/Power/ALSTOM on 13/02/2003 15:50 -----

Wally FALCONER 13/02/2003 15:15

To:

Kevin SPIRES/GBRUG01/Power/ALSTOM@GA

cc:

Subject: Re: Security Info (Document link: Kevin SPIRES)

Kevin

Rugby personnel attending site

Wally Falconer

Technical Service Engr expected arrival at

site 24th February 2003

Ray McLoughlin Service Engineer

28th February

2003

Mike Storey

Service Engineer

28th February

2003

Mike Jones Mike Knibb Design Engineer Test Engineer

7th March 2003 1st April

2003

Wally

Kevin SPIRES 13/02/2003 14:04

To:

Wally FALCONER/GBRUG01/Power/ALSTOM, Dave

MURPHY/GBRUG01/Power/ALSTOM@GA

cc:

Subject: Security Info

Please note this.

Do we know who is going with Wally yet?

Kevin

----- Forwarded by Kevin SPIRES/GBRUG01/Power/ALSTOM on 13/02/2003 14:01 ------

"Phong Do" <PHONG-D@ipsc.com> on 13/02/2003 14:00:34

To: Bill Eisma/USRIC02/Power/ALSTOM@GA, Kevin

SPIRES/GBRUG01/Power/ALSTOM@GA

cc: Wally FALCONER/GBRUG01/Power/ALSTOM@GA

Subject: Security Info

Dear Bill/Kevin,

I need, ASAP, all people names, company names and estimated date of arrival of all contrators/subcontractors (ie from Alstom, Laser Measurement, Faro Arm, Nova Tech...) that Alstom will use for this U1 HP retrofit. Please see note below from our company vice president. Thanks.

"As of today (2/12/03) there has only been three "contractor information" turned into Security. I need to have each of you contract administrators make sure you give Security the information they need about your contractor as soon as possible. They need this info before the Unit One Outage starts. Thank you for your help."

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cc: <bill.eisma@power.alstom.com>

N	lame	Adderss	Siz	ze	À

Mike Ally	98 North 100 East Hinckley UT 84635	XL
Will Lovell	6260 N 2000 W Delta UT 84624	XL
Brad Thompson	220 W 100 N Delta UT 84624	XXL
Kelly Cloward	518 E 280 N Delta UT 84624	XL
Dave Spence	35 E 175 N Oak City UT 84649	XL
Rick Houston		
Craig Teeples	260 W 300 S Fillmore UT 84631	XL.
Neal Abbott	3755 W 2500 N Delta UT 84624	XXL
Steve Anzures	3470 W 4500 S Oasis UT 84650	XL
Randy Fields	59 W 300 N Hinckley UT 84635	XL
Mike Gould	1316 N 325 E Nephi UT 84648	XL
Shaun Harris	P.O. Box 684 Delta UT 84624	XL.
Neno Hoelzle	1475 W Ashby Rd Delta UT 84624	XL
Phil Jensen	4275 N 3000 W Delta UT 84624	XL
Russ Mangelson	880 E 400 N Nephi UT 84648	XXL
Doyce Olpin	1401 N 550 E Nephi UT 84648	XL
Kelly Oppenheimer	2015 N 3000 W Delta UT 84624	
Randy Riding	496 W 200 N Hinckley UT 84635	XXL
Rick Wagstaff	P.O. Box 354 Delta UT 84624	XL
Tony Wright	370 S 350 W Delta UT 84624	XXL
Mike Anderson	100 W 50 N Oak City UT 84649	XL
Clarke Christensen	245 N 100 W Oak City UT 84649	XL
Corry Carrol	456 S 320 W Delta UT 84624	L
Ken Crafts	P.O. Box 1111 Delta UT 84624	XL
Preston Eliason	4400 W 4500 S Hinckley UT 84635	L
Wayne Gasser	5053 W 2500 N Delta UT 84624	XXL
Paul McCollaum	7170 W 2500 N Abraham UT 84635	XL
Dan Pack	P.O. Box 38097 Leamington UT 84638	XL
Stewart Rowley	P.O. Box 2 Oak City UT 84649	XXL
Dean Smith	1546 W 1500 S Delta UT 84624	XXL
Wayne Spencer	1095 W Ashby Rd Delta UT 84624	XL
Elven Stokes	P.O. Box 38071 Leamington UT 84638	XXL
Bob Terry	6405 N 3000 W Delta UT 84624	XXXL
James Nelson		L
Phong Do		M
Craig Jones		XL
Jon Christenson		L
Garry Judskin		L

Purchaser : Intermountain Power Service Corporation
Equipment: HP Steam Path Components for Delta unit 1 HP Retrofit.
Contract #: 01-45510 dated April 9, 2001.
The parties concerned in the above mentioned Contract hereby agree that the Equipment supplie by ALSTOM Power Inc. completed installation on 3/28/03, all Technical Field Assistance Services were rendered and all tests associated with the Installation were completed. The unit was available for Turning Gear Operation on 3/28/03 and initial electical synchronization

The unit was available for Turning Gear Operation on 3/28/03 and initial electical synchronization occurred on 3/29/03.

Thereby, the full responsibility for operation, maintenance and insurance has been transferred

Thereby, the full responsibility for operation, maintenance and insurance has been transferred to the Purchaser/Owner and the Equipment Warranty period per Article 1 - Warranty, in Part C - Division C2 page C2-1 of the above referenced Contract has started.

The Warranty Period for the HP Steam Path Equipment, referenced in the Warranty section of the Contract, will expire at the end of the following periods, whichever shall expire first;

24 Month from initial electrical synchronization which occurred on 3/29/03 at 23.00Hrs

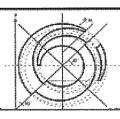
36 Month from delivery of the Equipment which occurred on 2/11/03

Date:

In no event shall the warranty period, including extensions thereto applicable to any component of the Work, extend for more than 54 month from the delivery date or 48 month from initial synchronization date shown above, whichever period shall expire first

For and on behalf of: Intermountain Power Service Corporation.		For and on behalf of ALSTOM Power Inc.		
	Name	George W. Cross	Name	: Wim F. (Bill) Eisma
	Position	President & Chief Operations Officer	Position	: Director Retrofit Projects
	Signature	: Ling W. Com	Signature	

Date: 5/02/03



TSR Project Name: Delta 1 HP 2nd Questionnaire from Febr. 2003 to April 2003

a

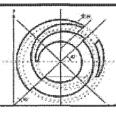
		After PAC	Poor Mediocre Adequate Good Excellent 1 2 3 4 5 6 7 8 9 10
1		How do you rate ALSTOM's project execution?	
2		How do you rate ALSTOM's site performance?	X X
3		Are you satisfied with ALSTOM's documentation and O&M Manual?	X X
4 (Does ALSTOM meet the time schedule regarding delivery dates and site activities?	
5 (Are you satisfied with the Quality of the equipment?	
6 (Are punch-list items completed expeditiously ?	9
7 (Are you satisfied with ALSTOM's training on site?	
8 (Does the unit perform according contractual requirements ?	8
9 (Are you satisfied with ALSTOM's products and services?	9
10 (Are you satisfied with ALSTOM's after sales service?	and the second of the second o
			- -
			-
	*********	Please put "x" into the range which reflects your rating most.	

IP7008361

CERTIFICATE OF PLACING EQUIPMENT INTO SE	RVICE
Purchaser : Intermountain Power Service	e Corporation
Equipment: HP Steam Path Components for Delta u	unit 1 HP Retrofit.
Contract #: 01-45510 dated April 9, 2001.	
The parties concerned in the above mentioned Contraby ALSTOM Power Inc. completed installation on 3/2 Services were rendered and all tests associated with The unit was available for Turning Gear Operation or occurred on 3/29/03. Thereby, the full responsibility for operation, maintenato the Purchaser/Owner and the Equipment Warranty Division C2 page C2-1 of the above referenced Cont The Warranty Period for the HP Steam Path Equipment of the Contract, will expire at the end of the following page Month from initial electrical synchronic 36 Month from delivery of the Equipment In no event shall the warranty period, including extens Work, extend for more than 54 month from the deliver shown above, whichever period shall expire first	18/03, all Technical Field Assistance the Installation were completed. In 3/28/03 and initial electical synchronization ance and insurance has been transferred by period per Article 1 - Warranty, in Part C - aract has started. Interferenced in the Warranty section periods, whichever shall expire first; It is a started on 3/29/03 at 23.00Hrs It is which occurred on 2/11/03 Is sions thereto applicable to any component of the
Date:	Date: 5/02/03
For and on behalf of:	For and on behalf of
Intermountain Power Service Corporation.	ALSTOM Power Inc.
Name George W. Cross	Name : Wim F. (Bill) Eisma
Position President & Chief Operations Officer	Position : Director Retrofit Projects

Signature :

Signature : Sugu Com



TSR Project Name: Delta 1 HP 2nd Questionnaire from Febr. 2003 to April 2003

 $\omega M \pi$

	After PAC	Poor Mediocre Adequate Good Excellent 1 2 3 4 5 6 7 8 9 10
1	How do you rate ALSTOM's project execution?	
2	How do you rate ALSTOM's site performance?	
3	Are you satisfied with ALSTOM's documentation and O&M Manual?	x 22 E
4	Does ALSTOM meet the time schedule regarding delivery dates and site activities?	
5	Are you satisfied with the Quality of the equipment?	8
6	Are punch-list items completed expeditiously?	9 3
. 7	Are you satisfied with ALSTOM's training on site?	
8	Does the unit perform according contractual requirements ?	8 2 8
9	Are you satisfied with ALSTOM's products and services?	
10	Are you satisfied with ALSTOM's after sales service?	9
		····
	Please put "x" into the range which reflects your rating most.	

From: <bill.eisma@power.alstom.com>

To: <phong-d@ipsc.com> **Date:** 6/17/2003 1:29:40 PM

Subject: Delta 1. Customer Satisfaction

Phong,

I send the attached form with a letter dated May 2, 2003. This might have got lost somehow somewhere, I would therefore appreciate if you could take a couple of minutes to complete the attached and return it so we can enter your opinions into our data base.

Thanks,

Bill

(See attached file: Cust.Sat.Survey (after PAC).xls)

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Date: 2/13/03 9:43AM

Subject: Delta unit 1. US Vendors info.

Phong

details of the other guys.

I'll have to try and get approx dates off Wally.

Regards

Kevin

Laser Measurement Services Inc, 301 Montreal Street, Playa Del Ray, CA 90293

Mr. Martin J. Morris, Tel,: (310) 822-585, Fax: (310) 822-9394, E-mail: mmlms@attbi.com

FARO Arm Rental.

Edison ESI, 7300 Fenwick Lane, Westminster, CA 92683

Mr. Marco Parize, Tel.: (714) 895-0151, Fax: (714) 895-0298, E-mail: Marco.Parize@sce.com

New E-Control Cards Supply + Installation NovaTech., 328 South Link Lane Ste. 13, Fort Collins. CO 80524 Mr. Joe Hovorka, Tel.: (970) 224-2223, Fax: (970) 224-1700, E-mail: novatech@novatechcorp.net

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CERTIFICATE OF PLACING EQUIPMENT INTO SERVICE

Purchaser	:	Intermountain Po	ower:	Service	Corporation
					•

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Thereby, the full responsibility for operation, maintenance and insurance has been transferred to the Purchaser/Owner and the Equipment Warranty period per Article 1 - Warranty, in Part C - Division C2 page C2-1 of the above referenced Contract has started.

The Warranty Period for the HP Steam Path Equipment, referenced in the Warranty section of the Contract, will expire at the end of the following periods, whichever shall expire first;

24 Month from initial electrical synchronization which occurred on 3/29/03 at 23.00Hrs 36 Month from delivery of the Equipment which occurred on 2/11/03

In no event shall the warranty period, including extensions thereto applicable to any component of the Work, extend for more than 54 month from the delivery date or 48 month from initial synchronization date shown above, whichever period shall expire first

Date:		Date: 5/02/	03				
For and on Intermount	behalf of: ain Power Service Corporation.	For and on behalf of ALSTOM Power Inc.					
Name	George W. Cross	Name	: Wim F. (Bill) Eisma				
Position	President & Chief Operations Officer	Position	: Director Retrofit Projects				
Signature	:	Signature	:				

ALSTOM Power Inc. 2800 Waterford Lake Drive Midlothian, VA 23112

takocer.xls

From:

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date:

2/13/03 9:02AM

Subject:

Re: Security Info

Phong - Mike Jones will be there to measure IP.

Bill - Can you provide names / dates of novatech, laser & Faro guys please?

Kevin

----- Forwarded by Kevin SPIRES/GBRUG01/Power/ALSTOM on 13/02/2003 15:50 -----

Wally FALCONER 13/02/2003 15:15

TO:

Kevin SPIRES/GBRUG01/Power/ALSTOM@GA

cc:

Subject: Re: Security Info (Document link: Kevin SPIRES)

Kevin

Rugby personnel attending site

Wally Falconer

Technical Service Engr

expected arrival at

site 24th February 2003

Ray McLoughlin Service Engineer

28th February

2003

Mike Storey

Service Engineer

28th February

2003

Mike Jones Mike Knibb

Design Engineer Test Engineer

7th March 2003 1st April

2003

Wally

Kevin SPIRES 13/02/2003 14:04

To:

Wally FALCONER/GBRUG01/Power/ALSTOM, Dave

MURPHY/GBRUG01/Power/ALSTOM@GA

cc:

Subject: Security Info

Please note this.

Do we know who is going with Wally yet?

Kevin

----- Forwarded by Kevin SPIRES/GBRUG01/Power/ALSTOM on 13/02/2003 14:01 ------

"Phong Do" <PHONG-D@ipsc.com> on 13/02/2003 14:00:34

To: Bill Eisma/USRIC02/Power/ALSTOM@GA, Kevin

SPIRES/GBRUG01/Power/ALSTOM@GA

cc: Wally FALCONER/GBRUG01/Power/ALSTOM@GA

Subject: Security Info

Dear Bill/Kevin,

I need, ASAP, all people names, company names and estimated date of arrival of all contrators/subcontractors (ie from Alstom, Laser Measurement, Faro Arm, Nova Tech...) that Alstom will use for this U1 HP retrofit. Please see note below from our company vice president. Thanks.

"As of today (2/12/03) there has only been three "contractor information" turned into Security. I need to have each of you contract administrators make sure you give Security the information they need about your contractor as soon as possible. They need this info before the Unit One Outage starts. Thank you for your help."

CONFIDENTIALITY:

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CC:

<bill.eisma@power.alstom.com>



CUSTOMER SERVICE
TECHNICAL SERVICE SECTION

CHECKLIST REFERENCE NO.

1175

CONTRACT:

INTERMOUNTAIN

UNIT NUMBER:

1

ST NUMBER:

11246

COMPLETED COPY

SECTIONS 1 - 9

THE ENCLOSED DOCUMENTS FORM A RECORD OF MEASUREMENTS TAKEN DURING STRIPDOWN / REBUILD OF THE MACHINE IDENTIFIED ABOVE



CUSTOMER SERVICE TECHNICAL SERVICE SECTION

CHECKLIST REFERENCE NO.

1175

CONTRACT:	INTERMOUNTAIN
UNIT NUMBER:	1
ST NUMBER:	11246
Signed:	_ for Stripdown
Signed:	_ for Rebuild

THE ENCLOSED DOCUMENTS FORM A RECORD OF MEASUREMENTS TAKEN DURING STRIPDOWN / REBUILD OF THE MACHINE IDENTIFIED ABOVE



CUSTOMER SERVICE TECHNICAL SERVICE SECTION

CHECKLIST SECTION INDEX

Checklist No. 1175

<u>SECTION</u>	TITLE
1	QUALITY PLAN
	TURBINE STRIPDOWN
2	HP CYLINDER
3	COUPLINGS AND PEDESTALS
4	Not used
	TURBINE REBUILD
5	HP CYLINDER WORKS BUILD
6	HP CYLINDER SITE BUILD
7	HP CYLINDER MACHINING DATA
8	COUPLINGS
9	BEARINGS AND PEDESTALS

	FIELD QUALITY PLAN PAGE 1 of 1												
PLAN TYPE: OVERHAUL TITLE: 2003 HP REPLANT				CONTRACT PLAN No: IM/01/001 PR CONTRACT NAME: INTERMOUNTAIN ISS			ISSUE D	ARED BY: W.H. FALCONER E DATE: FEBRUARY 2003 GION: A FEBRUARY 2003					
API	PROVAL REFEREN ABBREVIATIONS		oint	l = In	opy of docum -process chec urveillance	•		N = N	otify	read	dines	document ss for test sspn/document	
NO	NOTE : Prior to commencement of any section of the following Field Quality Plan, reference documents and acceptance standards, identified in columns 6 & 7, must be verified as the current issues.												
NO.	COMPONENT/ACTIVITY	NENT/ACTIVITY REQUIREMENT	TYPE OF CHECK QUA	QUANTITY	QUANTITY REFERENCE	ACCEPTANCE	RECORD	AGENCY				REMARKS	DWG
	1			OF CHECK	DOCUMENT	STANDARD	FORMAT	SUB	ALST	cust			REV
1	TURBINE CHECKLIST (STRIPDOWN AND REBUILD)	CLEARANCE CHECKS	MEASUREMENT	100%	N/A	MACHINE DRAWINGS	CHECKLIST REF No. 1175		X I S A	С		SECTIONS 2 to 9	

From:

<wally.falconer@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date:

4/9/03 2:07AM

Subject:

Intermountain Unit 1 HP replant - checklist (1)

Hello Phong

As promised I am forwarding a copy of the checklist in unapproved form. The formal copy will arrive in due course. Because the file sizes are quite large I am sending it in two separate emails. (Sections 2,6,7,8 & index)

(See attached file: 6HP-RBUS.pdf) (See attached file: CL_INDEX.pdf)

Hope you are enjoying getting to know your family again ! I know I am.

Best regards, Wally

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From:

Richard Houston

To:

Dave Spence; James Nelson; Phong Do

Date:

2/4/03 12:55PM

Subject:

Measurements for 8th stage diaphragm

I have attached two data sheets for measurements on the 8th stage diaphragm. I would like to get this info while the Fero arm is here for Alstom. Even if we don't install the spare 8th stage diaphragm in the IP this info will be helpful in the future.

On the rotor wheel diameters (cover and root radial seal) we need the 8th stage in particular but info on all the stages would be great to have if they are going to be taking the data anyway.

Thanks for your help in this.

By the way - these can be printed out by using Windows imaging, selecting 11×17 paper, and printing to fit the page.

If you can see some changes needed let me know

Rick

CC:

Kelly Cloward

From: To: <kevin.spires@power.alstom.com>

Date:

"Phong Do" <PHONG-D@ipsc.com>

Date: Subject: 4/8/03 9:51AM Outage Programme

Hi Phong

Try this.

It doesn't have an IP but you may be able to work out what needs doing to insert your own IP portion.

If I can be of any further help just let me know.

If not I will see you next Tuesday.

Regards

Kevin

This is the best we can do at this time & have attached as a PDF and compressed Suretrak back up. I assume you have Primavera

Susqanna HP 3LP replant

(See attached file: Hplp.prx) (See attached file: SureTrak_ HPLP.pdf)

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Phong Do

To:

kevin.spires@power.alstom.com

Date:

4/23/03 8:35AM

Subject:

Re: Intermountain IP Rotor Cooling

Kevin,

Thanks for the comments and efforts of finding the root-caused problem and alternative. However, there was not an explanation for the increased of the IP cooling absolute temperature. The U1 IP cooling current temperature is about 14F and 16F higher than U2 & U1 preoutage, respectively. Would you please:

- 1. Double check and send us a heat balance diagram for U1 showing all HP stages steam conditions (P,T, h...).
- 2. Provide some comment regarding IP rotor creep life that effected by 940F IP cooling.
- 3. Some reasons why the IP cooling temperature is higher
- 4. Resolution to cool the IP cooling steam.

I double checked the U1 IP double flow (9th stage) diaphragm packing, spill strip radial clearances, the L' wheel to diaphragm axial clearances and found that all clearances are within GE spec and the as-lefts were also close to the as-founds. The U1 IP double flow (IPDF) stage was also replaced with spare one during this outage. No mechanical damages or concern were noted at the as-left. Noticed that we also replaced the IPDF on Unit 2.

Even there were higher temperature response (with the IP cooling steam flow) between the GE and TE (for both units), we are not looking for resolution to even out the differences between the GE and TE. As we tracked back 365 days, the IPDF (of both units) show that there was a consistently temperature differences between the TE and GE. But they were never came in alarm. If we can cool down the U1 IP cooling by 14F, there would not be any alarm.

Mike and I both look at the IP cooling drain line and orifice and agreed that the orifices are for draining only and not for cooling.

One possible resolution is to tight the cold reheat (exhaust) into the IP cooling (at proper position, pressure location) to cool the cooling steam.

GE is not recommending us the raise the alarm set point.

Our plant manager is quite concern about the alarm. He would like to resolve this ASAP. Please help. Thanks.

CC: Alan.holmes@power.alstom.com; robert.brown@power.alstom.com; robert.cunningham@power.alstom.com

From: Phong Do

To: Aaron Nissen; Dave Spence; James Nelson; Jerry Hintze

Date: 4/16/03 9:33AM Subject: Response from GE

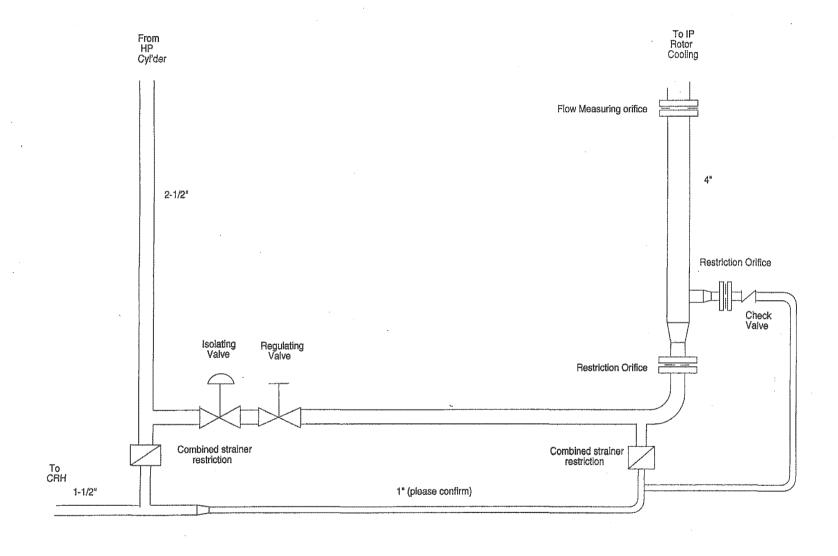
FYI, reponse from GE regarding U1 IP cooling.

"Phong, Hope this info helps. Bob, The design of the unit requires that the temperature of the 8th stage be controlled to the values provided. There is no "margin" in this number. This value was established during the design of the unit and the flow engineered to produce that result. The issue is with the long term rupture life of the rotor bore, wheel and dovetail.

The 8th stage wheelspace temperature is a function of the cooling flow, the cooling steam temperature and the condition of the 8th stage diaphragm. The cooling flow comes from the 2nd stage of the HP turbine and is controlled by the cooling steam valve (SRCV). As the condition of the 8th stage deteriorates the cooling valve (SRCV can be opened to pass additional cooling flow, and lower the 8th stage wheelspace temperature. Before proceeding the following should be reviewed:

- 1) Is the cooling valve (SRCV) wide open so that no additional cooling steam can be admitted into the 8th stage wheelspace?
- 2) Has the temperature been increasing gradually, or has it always been high?

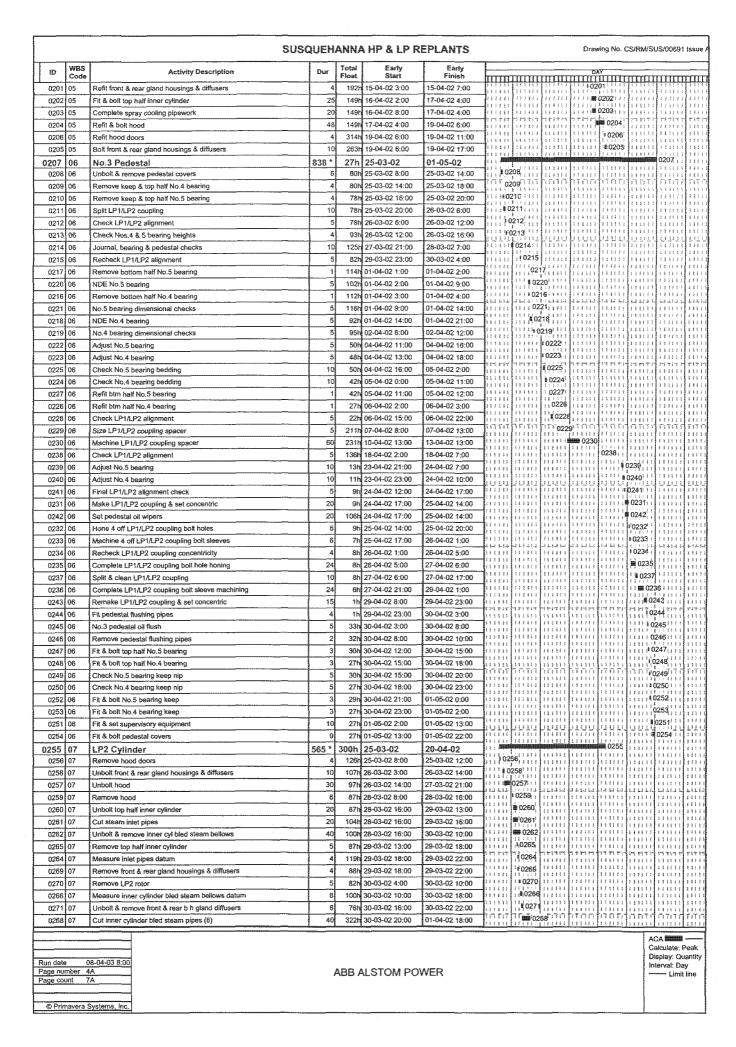
Having a 20F difference between units is not unrealistic as the temperature is controlled by the position of the cooling valve (SRCV) and each unit might be set differently and have slightly different flow areas."



	,		-	·	A HP & LP R		Drawing No. CS/RM/SUS/006911
ID	WBS Code	Activity Description	Dur	Total Float	Early Start	Early Finish	DAY
001	01	General	919 *	0	23-03-02	03-05-02	
0002	01	Turbine shutdown	0	·	23-03-02 0:00 *		
0003	01	Turbine cooling	56	<u></u>	23-03-02 0:00	25-03-02 8:00	- 1 mm 0003x 1 6 1 1 1 2 3 4 3 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0004	01	Delag HP cylinder	36		23-03-02 20:00	25-03-02 8:00	
0005	ļ	Issue Permit For Work Assess turbine catenery	5		27-03-02 23:00	28-03-02 4:00	
0007	01	Assess rotor alignments	5	 	30-03-02 4:00	30-03-02 10:00	
8000		Assess rotor alignments (new rotors)	5	221	06-04-02 22:00	07-04-02 3:00	118 7 8 1
0009	01	Assess rotor alignments	5	151	23-04-02 14:00	23-04-02 19:00	
0010	01	Oil flush ready	0	 	30-04-02 3:00		
0011	01	Relag HP cylinder	36		01-05-02 15:00	03-05-02 3:00	
0012		Clear Permit For Work			-	02-05-02 9:00	
0013	01	Turbine available for barring	0	-		02-05-02 9:00	
0014	01	Turbine available for steam	829 *	2h	25-03-02	01-05-02	0015
015	02	No.1 Pedestal Unbolt & remove pedestal cover	623	 		25-03-02 14:00	10016
0017	02	Unbolt & remove keep & top half No.1 bearing	4	1471	25-03-02 14:00	25-03-02 18:00	
0038	02	Journal, bearing & pedestal checks	5		27-03-02 5:00	27-03-02 11:00	
0018	02	Check No.1 bearing height	2	219h	27-03-02 14:00	27-03-02 16:00	
0019		Remove btm half No.1 bearing	1	105h	30-03-02 22:00	30-03-02 23:00	
020		NDE No.1 bearing	5		31-03-02 8:00	31-03-02 13:00	
0021	02	No.1 bearing dimensional checks	5	-	01-04-02 11:00	01-04-02 16:00	
0022		Adjust No.1 bearing Check No.1 bearing bedding	10		02-04-02 6:00 02-04-02 15:00	02-04-02 12:00	
0023	02 02	Check No.1 bearing bedding Refit btm half No.1 bearing	1	64h	04-04-02 15:00	03-04-02 1:00	
0042	02	Remove btm half No.1 bearing	1	22h	07-04-02 12:00	07-04-02 23:00	
0055	02	Refit btm half No.1 bearing	1	134h		08-04-02 13:00	
0025	02	Adjust No.1 bearing	5	94h	23-04-02 19:00	24-04-02 0:00	- 1111 1111
0026	02	Fit pedestal flushing pipe	2	40h	28-04-02 9:00	28-04-02 11:00	10026
0027	02	No.1 pedestal oil flush	5	3h	30-04-02 3:00	30-04-02 8:00	
0028		Remove pedestal flushing pipe	1	3h	30-04-02 8:00	30-04-02 9:00	
0029	02	Fit & bolt top half No.1 bearing	3	3h	30-04-02 9:00	30-04-02 12:00	
0030	02	Check No.1 bearing keep nip	3	2h 2h		30-04-02 18:00 30-04-02 21:00	
0031	02 02	Fit & boit No.1 bearing keep Fit & set supervisory equipment	10	ļ	30-04-02 18:00	01-05-02 7:00	— 141641 31341 11411 114
0033	02	Fit & bolt pedestal cover	5		01-05-02 8:00	01-05-02 13:00	121.20 111.00 111
34	03	HP Cylinder	621 *	244h	25-03-02	22-04-02	0034
0039	03	Fit btm half cylinder erection packers	4	101h	25-03-02 8:00	25-03-02 12:00	[
0035	03	Unbolt top inlet pipes	20	101h	25-03-02 8:00	26-03-02 4:00	- [1] [1] (1) (1) (1) (1) [1] [1] [1] [1] [1] [1] [1] [1] [1] [1]
0036		Unbolt exhaust pipes	40	81h	25-03-02 8:00	27-03-02 1:00	
0037		Unbolt & remove top half 'bolt on' glands	6	79h		26-03-02 6:00	
0040	-	Bolt heat & remove outer half joint fasteners	20		26-03-02 6:00 27-03-02 3:00	27-03-02 3:00	
0041	03	Remove top half outer cylinder Unbolt & remove top half diaphragms (12)	24		27-03-02 9:00	28-03-02 9:00	
0045		Mark top half outer cylinder gland position	4	 	27-03-02 11:00	27-03-02 15:00	
3044	ļ	Unbolt & remove top half outer cylinder glands	12		28-03-02 10:00	28-03-02 22:00	
0048	03	Remove HP rotor	5	69h	29-03-02 9:00	29-03-02 14:00	13 (6) 10048 (6) 1 1 1 1 1 1 1 1 1
0049	03	Remove btm haif outer cylinder glands	4	·	29-03-02 14:00	29-03-02 18:00	10046 1004
0050	03	Remove btm half diaphragms (12)	24		29-03-02 14:00	30-03-02 15:00	
0047	03	Blend top half outer cylinder to exhaust gland	40	 	29-03-02 15:00	31-03-02 9:00	
	03	Remove btm half nozzle plate	20	{	30-03-02 1:00	30-03-02 22:00	
0052	03	Mark btm half outer cylinder gland position Blend btm half outer cylinder to exhaust gland	40	69h 69h	30-03-02 15:00 30-03-02 19:00	30-03-02 19:00 01-04-02 13:00	1,0052
0053	03	Remove top half nozzle plate	20	ļ	30-03-02 19:00	31-03-02 17:00	
0062		Clean btm half diaphragm & gland grooves	16		31-03-02 9:00	01-04-02 1:00	#0051 40052 40056 40056
0063	03	Clean top half diaphragm & gland grooves	16		31-03-02 9:00	01-04-02 1:00	m 0063
056		Clean btm half outer cylinder half joint	10		31-03-02 17:00	01-04-02 3:00	134 4 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0046	03	Clean top half outer cylinder half joint	10	76h	31-03-02 19:00	01-04-02 5:00	
057	03	Fit & bolt top half outer cylinder	15	 		02-04-02 6:00	0057
0058		Machine nozzle plates sealing faces	30			03-04-02 18:00	- ₩αργηρος [5530] μερολιανία στο Αυγολία
0059		Unbolt & remove top half outer cylinder	15		03-04-02 19:00	04-04-02 11:00	
0066		Fit top half nozzle plates	20		05-04-02 1:00	05-04-02 22:00	13 6 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0091 0092		Fit new HP rotor Remove HP rotor	5	42h 22h	05-04-02 12:00 07-04-02 15:00	05-04-02 17:00 07-04-02 22:00	
0064		Set laser & position btm half outer cylinder	10			08-04-02 12:00	
0070	03	Set laser gear & map half joint	10		08-04-02 12:00	09-04-02 0:00	
0065		Fit btm half nozzie plates	20	ļ	09-04-02 0:00	10-04-02 0:00	
0069		Fit btm half diaphragms (12)	104	20h	09-04-02 1:00	14-04-02 5:00	- 0065 - 0069 - 0069
0067		Fit btm half outer cylinder glands	4	16h	14-04-02 5:00	14-04-02 11:00	
			******************************		******		ACA ####
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	WBS		T-	Total	Early	Early	
D	Code	Activity Description	Dur	Float	Start	Finish	DAY
072	03	Fit HP rotor	5	16h	 	14-04-02 16:00	
074	03	Check axial clearances	8			15-04-02 4:00	
075	03	Mouse btm half diaphragms & glands	8		}	15-04-02 13:00	
076	03	Remove HP rotor	5			15-04-02 18:00	- 1111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
071	03	Size outer cylinder palm & c/l key packers	56		15-04-02 18:00 15-04-02 18:00	15-04-02 22:00 18-04-02 4:00	
077	03	Adjust btm half diaphragms	40	ļ	15-04-02 18:00	17-04-02 22:00	
079	03	Machine outer cylinder packers Fit outer cylinder palm & c/l key packers	6	ļ		18-04-02 4:00	
080	03	Prepare btm half outer cylinder for rebuild	10	ļ		18-04-02 15:00	10080
081	03	Final fit HP rotor	5	 	18-04-02 15:00	18-04-02 20:00	
082	03	Check rotor bumping clearance	3	ļ	 	18-04-02 23:00	
083	03	Fit & bolt top half outer cylinder glands	4	16h	18-04-02 23:00	19-04-02 3:00	0083
078	03	Fit & bolt top half diaphragms (12)	24	 	19-04-02 1:00	20-04-02 2:00	
086	03	Fit top half outer cylinder	5	14h	20-04-02 2:00	20-04-02 7:00	1115434 417414 21444 24444 2464 240086 24444 2444
085	03	Check rotor bumping clearance	3	14h	20-04-02 8:00	20-04-02 11:00	- 17 8 8 7 6 6 8 6 8 7 8 8 9 6 7 7 8 9 8 6 7 8 8 9 8 7 7 7 7 7 7 7 7 8 9 8 9 8 9 8
087	03	Refit & bolt heat half joint fasteners	40	ļ	20-04-02 8:00	22-04-02 1:00	- 13 C C F F 1 C C C C C C C C C C C C C C C
088	03	Bolt top inlet pipes	40	254h	20-04-02 8:00	22-04-02 1:00	Մանալիութավում ինանիկ <u>ան</u> 0088 ներվ հենցվ
089	03	Bolt exhaust pipes	50	ļ	20-04-02 8:00	22-04-02 12:00	
090	03	Remove btm half cylinder erection packers	4	220h		22-04-02 1:00	
	03	Refit & bolt top half 'bolt on' glands	1 4		22-04-02 1:00	22-04-02 5:00	11:11:11:11:11:11:11:11:11:11:11:11:11:
94	04	No.2 Pedestal	823 *	0	25-03-02	01-05-02	0094
	04	Unboit & remove pedestal covers	8		25-03-02 16:00	26-03-02 0:00	
097	04	Unbolt & remove keep & top half thrust bearing	4	82h	26-03-02 0:00	26-03-02 4:00	
096	04	Unbolt & remove keep & top half No.3 bearing	1 4	81h	26-03-02 4:00	26-03-02 9:00	0096
98	04	Unbolt & remove keep & top half No.2 bearing	4	79h	26-03-02 6:00	26-03-02 11:00	[iii: 1 00 08
101	04	Remove btm half thrust bearing	3	76h		26-03-02 11:00	
99	04		10		26-03-02 11:00	27-03-02 0:00	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
100	04	Split HP/LP1 coupling Check HP/LP1 alignment	5	<u> </u>	27-03-02 0:00	27-03-02 0:00	
102	04				27-03-02 5:00	27-03-02 5:00	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
-		Check Nos.2 & 3 bearing heights	10	140h	27-03-02 5:00	27-03-02 16:00	
03	04	Journal, bearing & pedestal checks	10			 	<u>- 18 8 8 8 8 8 8 19 7, 19 7, 19 7, 1</u> 8 8 8 8 8 8 1 19 8 8 8 8 8 8 1 19 8 8 8 8 8 8 1 19 8 8 8 8 8 1 19 8 8 8 8 8 8 1 19 8 8 8 8 8 8 1 19 8 8 8 8 8 8 1 19 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
04	04	Recheck HP/LP1 alignment	- 5	69h	29-03-02 3:00	29-03-02 9:00	terra man to mi Control to the man terrain to the man terrain to the man terrain terrains and te
71	04	Remove btm half No.2 bearing	1 -	104h	30-03-02 23:00	31-03-02 0:00	
72	04	NDE No.2 bearing	5	113h		31-03-02 18:00	Jeren erii ja arabarah arabarah arab
05	04	Remove btm half No.3 bearing	1 1		01-04-02 2:00	01-04-02 3:00	# ? 3 7 3 7 3 8 8 8 8 8 8 8 7 8 7 1 1 1 2 3 5 5 6 8 8 8 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8
_	04	NDE No.3 bearing	5	97h		01-04-02 14:00	[[[[[[[[[[[[[[[[[[[[
107	04	No.3 bearing dimensional checks	5	109h	01-04-02 16:00	01-04-02 21:00	
		Adjust No.3 bearing	5		02-04-02 6:00	02-04-02 12:00	
173	04	No.2 bearing dimensional checks	5	95h	-	02-04-02 12:00	3 4 2 2 3 3 4 1 5 3 1 0473 3 4 3 4 6 5 5 6 5 6 5 5 5 5 5 6 7 8 5 5 7 5 6 6 6 5 7 5 6 6 6 6 7 5 7 6 6 6 6
174	04	Adjust No.2 bearing	5	95h		02-04-02 17:00	
109	04	Check No.3 bearing bedding	10	52h	04-04-02 14:00	05-04-02 0:00	
-	04	Check No.2 bearing bedding	10	ļ	04-04-02 22:00	05-04-02 9:00	113 13 11 11 11 11 11 11 11 11 11 11 11
476	04	Refit btm half No.2 bearing	1	44h		05-04-02 10:00	
110	04	Refit btm half No.3 bearing	1	28h	06-04-02 1:00	06-04-02 2:00	[[] [] [] [] [] [] [] [] [] [
111	04	Check HP/LP1 alignment	5	27h	06-04-02 10:00	06-04-02 15:00	
16	04	Fit btm half thrust pads	2	23h	07-04-02 3:00	07-04-02 5:00	
13	04	Size HP/LP1 coupling spacer	5	22h	07-04-02 8:00	07-04-02 13:00	
187	04	Remove btm half thrust pads	2	22h	07-04-02 13:00	07-04-02 15:00	a har a tabula har a tabula a a a 2011 Tabula har a tabula a bala sa bala sa bala sa bala sa bala sa bala sa b 1888 53 1811 18 1886 0487 881 11 1886 11 1816 12 1816 13 1816 14
115	04	Machine HP/LP1 coupling spacer	60	210h	07-04-02 13:00	10-04-02 13:00	61 5 5 4 5 6 5 6 5 6 5 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
17	04	Remove btm half No.2 bearing	1	21h	07-04-02 23:00	08-04-02 0:00	
47	04	Refit btm half No.2 bearing	1	133h	08-04-02 13:00	08-04-02 14:00	Tanana 1 an Iona an air an an 64.4% ann an air an air an an air an an air an an air an an an air
12	04	Fit btm half thrust pads	2	16h	14-04-02 16:00	14-04-02 18:00	0112
14	04	Remove bim half thrust pads	2	22h	15-04-02 4:00	15-04-02 6:00	The contract of the tract of the property of the contract of t
	04	Make HP/LP1 coupling & set concentric	20	14h	20-04-02 11:00	21-04-02 7:00	
23		Hone 4 off HP/LP1 coupling bott holes	6		21-04-02 8:00	21-04-02 14:00	111111111111111111111111111111111111111
24		Machine 4 off HP/LP1 coupling bolt sleeves	6		21-04-02 11:00	21-04-02 17:00	- 57 6 7 8 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
25		Recheck HP/LP1 coupling concentricity	4		21-04-02 17:00	21-04-02 21:00	1
	04	Complete HP/LP1 coupling bolt hole honing	24	ļ	21-04-02 21:00	22-04-02 22:00	(0124 (0125 (0126 TT) (0177)
	04	Complete HP/LP1 coupling bolt sleeve machining	24		21-04-02 23:00	23-04-02 3:00	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	04	Split & clean HP/LP1 coupling	10		22-04-02 22:00	23-04-02 9:00	-
18		Check HP/LP1 alignment	5		23-04-02 9:00	23-04-02 14:00	
19		Adjust No.3 bearing	10		23-04-02 19:00	24-04-02 5:00	111111 111111 111111 111111 11111 0119
177		Adjust No.2 bearing	10		24-04-02 1:00	24-04-02 12:00	
-	04	Final HP/LP1 alignment check	5		24-04-02 17:00	24-04-02 22:00	
	04	Fit & bolt top half No.3 bearing	2		24-04-02 22:00	25-04-02 0:00	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	04	Set pedestal oil wipers	20		24-04-02 22:00	25-04-02 19:00	. # 5 6 6 5 5 6 8 5 6 7 5 6 7 6 7 8 7 8 6 7 6 7 6 7 7 7 7 7 7 7 7
	04	Fit & bolt top half No.2 bearing	20		24-04-02 23:00	25-04-02 1:00	1111111 111111 111111 111111 111111 1111
			1 2	ļ	25-04-02 0:00	25-04-02 1:00	र किसे के हो के जो के तो की जा कि
-	04	Check No.3 bearing keep nip	5		ļ		
	04	Check No.2 bearing keep nip		77h		25-04-02 6:00	
131	U4	Unbolt & remove top half No.3 bearing	2	/8h	25-04-02 5:00	25-04-02 7:00	RELIAND DESCRIPTION OF THE COLUMN TO SERVICE O
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ID	WBS Code	Activity Description	Dur	Total Float	Early Start	Early Finish	, DAY
0480	04	Unbolt & remove top half No.2 bearing	2	ļ	25-04-02 6:00	25-04-02 9:00	113 13 13 14 14 14 14 14 14 14 14 14 14 14 14 14
0132	04	Remake HP/LP1 coupling & set concentric	15	23h	27-04-02 17:00	28-04-02 9:00	Terres de como de care de care de care de care de amorajo con el c
0133	04	Fit pedestal flushing pipes	4		28-04-02 9:00	28-04-02 13:00	#0133 #0133 #0134
0134	04	Rebuild thrust bearing	8		28-04-02 9:00	28-04-02 17:00	[
0135	04	No.2 pedestal oil flush	5	 	30-04-02 3:00 30-04-02 8:00	30-04-02 8:00 30-04-02 10:00	10100 1
0136	04	Remove pedestal flushing pipes Fit & bolt top half No.3 bearing	3	1h		30-04-02 10:00	
0138	04	Fit & bolt top half No.2 bearing	3		30-04-02 11:00	30-04-02 14:00	121313 3333 3333 312313 3323 3333 3333
0139	04	Fit & bolt No.3 bearing keep	3	ļ	30-04-02 13:00	30-04-02 16:00	755 5 5 5 6 5 6 7 7 7 7 8 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7
0140	04	Fit & bolt No.2 bearing keep	3	0	30-04-02 14:00	30-04-02 17:00	1 2 2 2 3 2 3 3 4 3 3 3 4 4 1 3 2 3 5 4 3 4 3 2 7 1 1 7 6 7 5 8 3 1 2 7 4 4 5 0 1 4 0 2 3 3 1 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
0141	04	Fit & set supervisory equipment	10	0	30-04-02 17:00	01-05-02 3:00	18 18 18 18 18 18 1 1 1 1 1 1 1 1 1 1 1
0142	04	Fit & bolt pedestal covers	11	0	01-05-02 3:00	01-05-02 15:00	
0143	05	LP1 Cylinder	557 *	308h	25-03-02	19-04-02	
0144	05	Remove hood doors	4	941	25-03-02 8:00	25-03-02 12:00	26 6 4 0 1444 2 5 6 2 4 6 6 5 7 5 2 6 6 6 7 6 7 6 7 6 7 6 7 6 7 7 6 7
0146	05 05	Unbolt front & rear gland housings & diffusers Unbolt hood	30	78h	26-03-02 0:00 26-03-02 0:00	26-03-02 11:00 27-03-02 7:00	
		Remove hood	8	 	27-03-02 10:00	27-03-02 18:00	1 3 1 3 1 M n 1 4 M 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0149	05	Unbolt top half inner cylinder	20	ļ	27-03-02 18:00	28-03-02 15:00	
	05	Unbolt & remove inner cyl bled steam bellows	40	<u> </u>	27-03-02 18:00	29-03-02 12:00	
0150	05	Cut steam inlet pipes	20		27-03-02 20:00	28-03-02 18:00	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0152		Remove top half inner cylinder	5		28-03-02 22:00	29-03-02 3:00	
0157	05	Remove front & rear gland housings & diffusers	4	102h	29-03-02 3:00	29-03-02 7:00	
0153	05	Measure inlet pipes datum	4	119h	29-03-02 18:00	29-03-02 22:00	
0154	05	Measure inner cylinder bled steam bellows datum	8	100h	30-03-02 10:00	30-03-02 18:00]
0158		Remove LP1 rotor	5	72h	30-03-02 15:00	30-03-02 20:00	
0159	05	Unbolt & remove front & rear b h gland diffusers	6	72h	30-03-02 20:00	31-03-02 2:00	
0156	05	Cut inner cylinder bled steam pipes (8)	40		30-03-02 20:00	01-04-02 18:00	
0160	05	Unbolt & remove front & rear btm half diffusers	20	ļ		31-03-02 23:00	111423 34 70 7 10 7 12 2 2 3 1 1 2 2 3 3 3 3 3 3 3 3 3 3 3
0161	05 05	Unbolt & remove bim half inner cylinder	10	·	01-04-02 4:00	01-04-02 15:00	ระบบ และ เกาะ เมื่า เรื่องของ โบรมนาก หลดกลา โดย และ เป็น เมาะ เมาะ โรคมและ เกาะ เม 0.163 โรคม เบาะ เกาะ เบาะ เบาะ เบาะ เบาะ เบาะ เบาะ เบาะ เบ
0163 0164	05	Fit temporary inner cylinder palm packers Modify keel plate & steelwork	80		01-04-02 15:00	05-04-02 15:00	-
0165	05	Lift out old inner cyl bled steam beliows	8	ļ	01-04-02 23:00	02-04-02 7:00	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0162	05	Fit temporary axial keys & btm key packers	8	ļ	02-04-02 2:00	02-04-02 11:00	Territorio 162 de la companida
0155	05	Clean hood	30		02-04-02 12:00	03-04-02 19:00	60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0166	05	Lift in new inner cyl bled steam bellows	8	70h	02-04-02 16:00	03-04-02 0:00	20 8 8 6 6 1 1 1 2 8 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0167	05	Lift out old steam inlet bellows	2	64h	03-04-02 2:00	03-04-02 4:00	
0168	05	Lift in new steam inlet bellows	2	62h	03-04-02 6:00	03-04-02 9:00	
0169	05	Position new btm half inner cylinder	10	57h	03-04-02 14:00	04-04-02 0:00	
0170	05	Position new btm half inlet cylinder	10		04-04-02 0:00	04-04-02 11:00	111111 11111 11111 11111 11111 11111 1111
0171	05	Fit & boit inner cylinder bled steam bellows	40		04-04-02 0:00	05-04-02 18:00	
0173	05	Fit & boit front & rear b h gland diffusers	6		04-04-02 20:00	05-04-02 2:00	<u> </u>
0174	05	Btm half diaphragm laser check	8		05-04-02 17:00	06-04-02 1:00	kambam bin biyabaadaadi
		Bolt inlet cylinder bled steam bellows (2)	20			06-04-02 16:00	
0175 0178		Measure inlet pipes datum	80		06-04-02 1:00 06-04-02 1:00	06-04-02 3:00 10-04-02 1:00	0178
0176		Fit, weld & NDE B S pipe flanges (8) Size inlet bellows spacers	4	330h	06-04-02 3:00	06-04-02 9:00	\$21 4 7 3 1 1 1 5 6 8 3 4 1 4 W 0176 4 7 2 1 4 4 5 1 3 8 3 1 1 1 1 2 2 2 2 2 2 3 1 2 2 2 2 2 3 1 1 2 2 2 2
0179		Fit new LP1 rotor	5		06-04-02 3:00	06-04-02 10:00	- 3 0 6 5 8 5 6 5 6 6 6 6 5 6 7 7 9 7 9 7 9 7 9 8 9 6 9 6 9 6 9 7 9 7 9 7 9 7 9 7 9 7 9 7
0177		Machine inlet bellows spacers	20		06-04-02 15:00	07-04-02 15:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0180		Check blade tip & axial datum	3		07-04-02 3:00	07-04-02 6:00	Trossul 1 oction to the top odd to see the test of the color to the color to
	05	Shaft gland top leads	6	213h	07-04-02 3:00	07-04-02 11:00	
0181	05	Size inner cylinder btm key & palm packers	4	186h	07-04-02 8:00	07-04-02 12:00	haveet 1 : c : e : 1 : c : 0181 : e : c : 1 : e : c : 1 : e : c : 1 : e : c : 1 : e : c : 1 : e : c : c : 1 : e
0183		Size inner cylinder axial key packers	4	208h		07-04-02 16:00	111111 11111 1111 1111 1111 1111 1111 1111
0187		Machine inner cylinder btm key packers	20			08-04-02 12:00	
		Machine inner cylinder palm packers	40		07-04-02 12:00	09-04-02 12:00	113131 12351 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0186		Remove LP1 rotor	5			08-04-02 5:00	
0189		Adjust shaft gland clearances Machine inner cylinder sviat key nackers	40 20		08-04-02 5:00 09-04-02 12:00	10-04-02 5:00	Titti 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	05	Machine inner cylinder axial key packers Fit inner cylinder btm key & palm packers	20		09-04-02 12:00	10-04-02 12:00	
0190		Fit inner cylinder our key & pain packers Fit inner cylinder axial key packers	5		10-04-02 12:00	10-04-02 17:00	#10:10:3:
0185		Renew spray cooling pipework	80		10-04-02 17:00	14-04-02 17:00	0185
0192		Prepare cylinder for final box up	5		11-04-02 0:00	11-04-02 5:00	
0193		Final fit LP1 rotor	5		11-04-02 21:00	12-04-02 2:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0194	05	Check rotor bumping clearances	3	170h	12-04-02 2:00	12-04-02 5:00	112231 32351 31554 (01943 13313 1253 751141 7
0195	05	Fit & bolt top half inlet gland	4	170h	12-04-02 5:00	12-04-02 11:00	10195
0196	05	Fit & bolt stage 1-4 top half diaphragms	7		12-04-02 13:00	12-04-02 22:00	
	05	Fit & bolt stage 5-8 top half diaphragms	10		13-04-02 2:00	13-04-02 14:00	
0199		Check rotor bumping clearances	3	164h	13-04-02 14:00	13-04-02 17:00	
0198		Fit & bolt top half inlet cylinder	25		14-04-02 16:00	15-04-02 20:00	131535 (133) (133) (133) (133) (134)
0200	05	Fit & bolt inlet pipes, bellows & spacers	20	180h	14-04-02 23:00	15-04-02 20:00	
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ID.	WBS	Activity Description	Dur	Total	Early	Early	DAY
	Code 07	Unbolt & remove front & rear btm half diffusers	20	Float 76h	Start 30-03-02 22:00	Finish 31-03-02 19:00	1 1 1 1 1 1 1 1 1 1
	07	Unbolt & remove from a rear our nan diffusers Unbolt & remove btm half inner cylinder	10	ļ	31-03-02 23:00	01-04-02 10:00	
	07	Fit temporary axial keys & btm key packers	8	 	01-04-02 10:00	01-04-02 18:00	
	07	Fit temporary inner cylinder palm packers	20	87h	01-04-02 10:00	02-04-02 6:00	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0275	07	Modify keel plate & steelwork	80	63h	01-04-02 10:00	05-04-02 10:00	
0277	07	Lift out old inner cyl bled steam bellows	8	 	01-04-02 15:00	01-04-02 23:00	100000000000000000000000000000000000000
0278		Lift in new inner cyl bled steam bellows	8		02-04-02 8:00	02-04-02 16:00	
	07	Clean hood	30	 	02-04-02 12:00	03-04-02 19:00	0267, 111111 11111 11111 11111 11111 11111 1111
0279 0280	07	Lift out old steam inlet bellows	2		03-04-02 0:00	03-04-02 2:00	1010 2011 7 20 1100 1000 000 0011 1111 1111 1111 11
	07	Lift in new steam inlet bellows Position new btm half inner cylinder	10	<u> </u>	03-04-02 9:00	03-04-02 19:00	- 1
	07	Position new btm half inlet cylinder	10		03-04-02 19:00	04-04-02 5:00	0282
	07	Fit & bolt inner cylinder bled steam bellows	40	298	03-04-02 19:00	05-04-02 13:00	103631 103
0284	07	Fit & bolt front & rear b h gland diffusers	6	44h	04-04-02 18:00	05-04-02 0:00	1
0285	07	Btm half diaphragm laser check	8	44h	05-04-02 0:00	05-04-02 9:00	111111111111111111111111111111111111111
0287	07	Measure inlet pipes datum	2	346h	05-04-02 9:00	05-04-02 11:00	15 111 11111 1 10287 1 11111 1 11111 1 11111 1 11111
	07	Size inlet bellows spacers	4	346h	05-04-02 11:00	05-04-02 15:00	_0.000 0.000 0.777 0.000 0.000 0.000 0.000
	07	Fit new LP2 rotor	5		05-04-02 12:00	05-04-02 17:00	10 10 10 11 11 11 11 11 11 11 11 11 11 1
	07	Bott inlet cylinder bled steam bellows (2)	20 80	370h 283h	05-04-02 13:00 05-04-02 13:00	06-04-02 11:00 09-04-02 13:00	0290
	07 07	Fit, weld & NDE B S pipe flanges (8) Machine inlet bellows spacers	20	283h 323h	05-04-02 13:00 05-04-02 15:00	09-04-02 13:00	10 111 0111 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	07	Check blade tip & axial datum	3	186h	07-04-02 3:00	07-04-02 6:00	
	07	Shaft gland top leads	6	211h	07-04-02 5:00	07-04-02 13:00	
	07	Size inner cylinder btm key & palm packers	4	186h	07-04-02 8:00	07-04-02 12:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	07	Size inner cylinder axial key packers	4	208h	07-04-02 12:00	07-04-02 16:00	10295
298	07	Machine inner cylinder palm packers	40	182h	07-04-02 12:00	09-04-02 12:00	
0299	07	Remove LP2 rotor	5		08-04-02 5:00	08-04-02 12:00	11
	07	Machine inner cylinder btm key packers	20		08-04-02 12:00	09-04-02 12:00	0296
	07	Adjust shaft gland clearances	40		08-04-02 12:00	10-04-02 12:00	0300
	07	Machine inner cylinder axial key packers	20		09-04-02 12:00	10-04-02 12:00	
	07	Fit inner cylinder btm key & palm packers	20		10-04-02 0:00	11-04-02 0:00	111111 11111 11111 11111 11111 11111 1111
∤	07 07	Renew spray cooling pipework Ett inner cylinder avial key parkers	80 5		10-04-02 0:00	14-04-02 0:00	\$135555113535115351153251 4N2N4 635[113635[13365]1]
-	07	Fit inner cylinder axial key packers Prepare cylinder for final box up	, S	177h	11-04-02 12:00	11-04-02 17:00	
	07	Final fit LP2 rotor	5	ļ	11-04-02 5:00	11-04-02 12:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	07	Check rotor bumping clearances	3	172h	12-04-02 0:00	12-04-02 3:00	0306
	07	Fit & bolt top half inlet gland	4	168h	12-04-02 9:00	12-04-02 13:00	
0308	07	Fit & bolt stage 1-4 top half diaphragms	7	164h	12-04-02 17:00	13-04-02 2:00	8:58 2 3 5 5 5 4 5 5 6 5 8 5 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
0309	07	Fit & bolt stage 5-8 top half diaphragms	10	156h	13-04-02 12:00	14-04-02 0:00	133 5 5 6 7 1 5 6 6 6 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7
0310	07	Check rotor bumping clearances	3	156h	14-04-02 0:00	14-04-02 3:00	[17 8 9 7 1] [17 8 8 5 1] [17 8 7 1 1] [17 8 9 7 1] [17 8 9 7 1] [17 8 8 8 8 1] [17 8 8 8 8 1] [17 8 8 8 8 1]
	07	Fit & bolt top half inlet cylinder	25	163h		15-04-02 12:00	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	07	Refit front & rear gland housings & diffusers	4	188h	15-04-02 8:00	15-04-02 12:00	
	07	Fit & bolt top half inner cylinder	25	163h	15-04-02 12:00	16-04-02 14:00	
	07	Complete spray cooling pipework Fit & bott inlet nines hellows & spacers	20	163h		16-04-02 14:00 17-04-02 11:00	10111 10111 10111 1011 1011 1011 1011
0312		Fit & bolt inlet pipes, bellows & spacers Refit & bolt hood	48		16-04-02 14:00 17-04-02 13:00	19-04-02 11:00	
0316		Refit hood doors	40			19-04-02 19:00	
0318		Bolt front & rear gland housings & diffusers	10		19-04-02 15:00	20-04-02 1:00	10318
	08	No.4 Pedestal	371 *	10h	25-03-02	02-05-02	
320		Unbolt & remove pedestal covers	6			25-03-02 23:00	
3321	08	Remove keep & top half No.6 bearing	4	103h	25-03-02 23:00	26-03-02 3:00	[1 4 4 4 6 0 3 2 1 3 4 5 1 4 1 4 5 4 4 6 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1
3322	08	Remove keep & top half No.7 bearing	4		26-03-02 1:00	26-03-02 5:00	11:34 0322:33:4 (13:51: 12:11: 13:11:
	80	Split LP2/LP3 coupling	10		26-03-02 12:00	26-03-02 22:00	
	80	Check LP2/LP3 alignment	5		26-03-02 22:00	27-03-02 3:00	
325		Check Nos.6 & 7 bearing heights	10		27-03-02 10:00 27-03-02 21:00	27-03-02 14:00	114411 0326
	08	Journal, bearing & pedestal checks Recheck LP2/LP3 alignment	10	125h		28-03-02 7:00 29-03-02 23:00	0326 11111 0326 11111 10327
1328		Remove bottom half No.6 bearing	1 1	150h	30-03-02 12:00	30-03-02 13:00	#11.73 - 13.71 U328
0329		Remove bottom half No.7 bearing	 	149h	30-03-02 12:00	30-03-02 14:00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
330		NDE No.6 bearing	5	133h		30-03-02 18:00	
1332		NDE No.7 bearing	5	128h		31-03-02 1:00	
331	80	No.6 bearing dimensional checks	5	123h	01-04-02 1:00	01-04-02 6:00	13 1 4 1 1 1 3 1 1 0 3 3 1 2 3 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3
0333	80	No.7 bearing dimensional checks	5	123h	01-04-02 1:00	01-04-02 6:00	11111 11 10333 1 1 1 1 1 1 1 1 1 1 1 1 1
334		Adjust No.7 bearing	5		04-04-02 5:00	04-04-02 11:00	0334
0335		Adjust No.6 bearing	5			04-04-02 13:00	111111111111111111111111111111111111111
0336		Check No.6 bearing bedding	10		04-04-02 14:00	05-04-02 0:00	15 1 2 45 5 1 5 1 5 1 5 1 6 1 336 5 1 5 5 1 5 2 5 5 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
	80	Check No.7 bearing bedding	10		04-04-02 22:00	05-04-02 9:00	
3338		Refit btm half No.6 bearing	1	44h		05-04-02 10:00	
0339	08	Refit btm half No.7 bearing	1 1	36h	05-04-02 17:00	05-04-02 18:00	10339
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ιD	WBS Code	Activity Description	Dur	Total Float	Early Start	Early Finish	DAY
0340	08	Check LP2/LP3 alignment	5	ļ	06-04-02 0:00	06-04-02 5:00	0346
0341	08	Size LP2/LP3 coupling spacer	5	207h	07-04-02 12:00	07-04-02 17:00	[
0342	80	Machine LP2/LP3 coupling spacer	60	 	07-04-02 17:00	10-04-02 17:00	
0343	08	Make LP2/LP3 coupling & set concentric	20		14-04-02 13:00	15-04-02 12:00	-12:15:11 12:16:12 12:26:16:13:13:16:16:16:16:16:16:16:16:16:16:16:16:16:
0344	80	Hone 4 off LP2/LP3 coupling bott holes	6	 	15-04-02 12:00	15-04-02 18:00	14111 3111 31114 1115 1113 1113 1111 1111
0345 0346	08 08	Machine 4 off LP2/LP3 coupling bolt sleeves	4		15-04-02 15:00 15-04-02 23:00	15-04-02 23:00 16-04-02 3:00	
0347	08	Recheck LP2/LP3 coupling concentricity Complete LP2/LP3 coupling bolt hole honing	24		16-04-02 3:00	17-04-02 4:00	- 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0348	08	Complete LP2/LP3 coupling bolt sleeve machining	24		16-04-02 5:00	17-04-02 11:00	TISEEDE CETTE SELECT CETTE 0348 LE LETER FRANCE ESTE
0349	08	Split & clean LP2/LP3 coupling	10	 	17-04-02 4:00	17-04-02 15:00	
0350	80	Check LP2/LP3 alignment	5	141h	17-04-02 21:00	18-04-02 2:00	13 1 2 3 3 4 4 4 5 1 3 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
0351	08	Adjust No.7 bearing	10	15h	23-04-02 19:00	24-04-02 5:00	
0352	80	Adjust No.6 bearing	10			24-04-02 12:00	
0353	08	Final LP2/LP3 alignment check	5	ļ	ļ	24-04-02 22:00	
0481 0354	04 08	Fit & bolt top half No.7 bearing	20		24-04-02 22:00 24-04-02 22:00	25-04-02 0:00 25-04-02 19:00	- In retrieve home breed to a military many reco
0482	08	Set pedestal oil wipers Fit & bolt top half No.6 bearing	20	62h		25-04-02 1:00	
	08	Check No.7 bearing keep nip	5			25-04-02 5:00	
0484	08	Check No.6 bearing keep nip	5	62h	25-04-02 1:00	25-04-02 6:00	- 82 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
0485	08	Unbolt & remove top half No.7 bearing	2	63h	25-04-02 5:00	25-04-02 7:00	- 1
0486	08	Unbolt & remove top half No.6 bearing	2	62h	25-04-02 6:00	25-04-02 9:00	
0355	80	Remake LP2/LP3 coupling & set concentric	15		28-04-02 0:00	28-04-02 16:00	
0356	08	Fit pedestal flushing pipes	4	31h	28-04-02 16:00	28-04-02 20:00	1
0357	80	No.4 pedestal oil flush	5		30-04-02 3:00	30-04-02 8:00	
0358	08	Remove pedestal flushing pipes Eit & bolt too helf No 7 hearing	3	32h 32h	30-04-02 8:00 30-04-02 10:00	30-04-02 10:00 30-04-02 13:00	
0359	08 08	Fit & bolt top half No.7 bearing Fit & bolt top half No.6 bearing	3	32h	30-04-02 10:00	30-04-02 13:00	
0361	08	Check No.7 bearing keep nip	5	31h	30-04-02 11:00	30-04-02 19:00	17-11-11-11-11-11-11-11-11-11-11-11-11-1
0362	08	Check No.6 bearing keep nip	5	29h	30-04-02 16:00	30-04-02 21:00	######################################
0364	08	Fit & bolt No.7 bearing keep	3	31h	30-04-02 19:00	30-04-02 22:00	Terrer (1 1 1 1 1 1 1 1 1
0365	08	Fit & bolt No.6 bearing keep	3	28h	30-04-02 22:00	01-05-02 1:00	
0363	80	Fit & set supervisory equipment	10	26h	01-05-02 3:00	01-05-02 14:00	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0366	80	Fit & bolt pedestal covers	9	24h	01-05-02 16:00	02-05-02 1:00	133 4 4 4 6 7 3 1 4 4 7 8 7 4 7 4 7 4 7 4 7 4 7 4 7 4 7 4
0367	09	LP3 Cylinder	250 *	140h	25-03-02	19-04-02	######################################
	09	Remove hood doors	10	126h	25-03-02 8:00	25-03-02 12:00	13 40368; 11 14311 14311 1431 1431 1431 1431 143
0370 0369	09 09	Unbolt front & rear gland housings & diffusers Unbolt hood	30		26-03-02 4:00 26-03-02 16:00	26-03-02 15:00 27-03-02 23:00][::::::::::::::::::::::::::::::::::::
0309	09	Remove hood	8	-	27-03-02 23:00	28-03-02 7:00	21
0372	09	Unbolt top half inner cylinder	20		28-03-02 8:00	29-03-02 4:00	- 20 20 21 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2
0373	09	Cut steam inlet pipes	20	112h	28-03-02 8:00	29-03-02 6:00	1111111 100 0373 1 111111 1 111111 1 111111 1 111111 1 1
0374	09	Unbolt & remove inner cyl bled steam bellows	40	108h	28-03-02 8:00	30-03-02 1:00	
0381	09	Remove front & rear gland housings & diffusers	4	113h	28-03-02 16:00	28-03-02 20:00	\$ 1 3 7 4 5 10 38 7 1
0377	09	Remove top half inner cylinder	5		29-03-02 4:00	29-03-02 10:00	\$1 6 8 8 1 1 0 3 7 7 1 1 8 5 8 5 1 1 2 5 6 8 1 1 2 1 8 6 8 1 2 5 6 8 8 1 1 2 6 8 8 1 1 2 6 8 8 1 1 2 6 8 8 1 1
0376	09	Measure Inlet pipes datum	4	127h	29-03-02 10:00	29-03-02 14:00	
0382		Remove LP3 rotor	5		29-03-02 23:00	30-03-02 4:00	19 1
0378		Measure inner cylinder bled steam bellows datum	8 6		~~~	30-03-02 10:00	
0383 0380	09	Unbolt & remove front & rear b h gland diffusers Cut inner cylinder bled steam pipes (8)	40		30-03-02 5:00 30-03-02 10:00	30-03-02 12:00 01-04-02 10:00	
0384	09	Unbolt & remove front & rear btm half diffusers	20	-		31-03-02 9:00	T
0385		Unboft & remove bim half inner cylinder	10			01-04-02 15:00	
0386	09	Fit temporary inner cylinder palm packers	20		01-04-02 15:00	02-04-02 12:00	113361 1173 8 0386281 118442 123451 133511 183512 1855
0387	09	Modify keel plate & steelwork	80	58h	01-04-02 15:00	05-04-02 15:00	0387
		Fit temporary axial keys & btm key packers	8		01-04-02 18:00	02-04-02 2:00	
0389		Lift out old inner cyl bled steam bellows	8			02-04-02 7:00	
0379	09	Clean hood	30		02-04-02 11:00	03-04-02 18:00	1:
0390	09	Lift in new inner cyl bled steam bellows	8	}	02-04-02 16:00	03-04-02 0:00	
0391 0392	09	Lift out old steam inlet bellows Lift in new steam inlet bellows	2		03-04-02 2:00	03-04-02 4:00	
0393	09	Position new burn half inner cylinder	10		03-04-02 14:00	04-04-02 9:00	- 6 3 3 6 5 5 3 6 1 1 1 1 1 1 1 1 1
0394	09	Position new btm half inlet cylinder	10		04-04-02 0:00	04-04-02 11:00	0394
	09	Fit & bolt inner cylinder bled steam bellows	40		04-04-02 0:00	05-04-02 18:00	
0396	09	Fit & bolt front & rear b h gland diffusers	6			05-04-02 2:00	
0397	09	8tm half diaphragm laser check	8	36h	05-04-02 9:00	05-04-02 17:00	
0399	09	Measure inlet pipes datum	2		05-04-02 17:00	05-04-02 19:00	113 13 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0398		Bott inlet cylinder bled steam bellows (2)	20		05-04-02 17:00	06-04-02 15:00	1011 1111 1 038 1111 1
0400	09	Size inlet bellows spacers	4		05-04-02 19:00	05-04-02 23:00	134 4 5 6 1 7 7 8 7 1 1 1 1 1 0 4 0 0 1 1 1 4 4 4 4 4 4 4 4
0403	09	Fit new LP3 rotor	5		05-04-02 19:00	06-04-02 0:00	- C13141 C1613 C1614 C16
0402	09	Fit, weld & NDE B S pipe flanges (8)	80		05-04-02 20:00	09-04-02 18:00	<u> </u>
0401	09	Machine inlet bellows spacers	20	31/h	05-04-02 23:00	06-04-02 23:00	1.55 2 2 1 2 1 3 1 4 2 1 3 1 1 1 1 1 1 1 1 1 1 2 2 3 3 2 2 2 3 3 2 2 3 3 3 1 1 2 2 2 3 3 1 1 2 2 2 2
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ΩI	WBS Code	Activity Description	Dur	Total Float	Early Start	Early Finish	БАУ
0404	09	Check blade tip & axial datum	3	 	07-04-02 3:00	07-04-02 6:00	
0406	09	Size inner cylinder btm key & palm packers	4	1861	07-04-02 8:00	07-04-02 12:00	
0405	09	Shaft gland top leads	6	2071	07-04-02 11:00	07-04-02 17:00	1 4 5 6 6 7 1 7 5 7 6 7 7 7 7 7 7 9 10 40 5 1 7 8 8 1 7 7 8 8 8 7 7 7 8 8 8 9 9 9 9 9 9 9 9 9
0407	09	Size inner cylinder axial key packers	4	208	07-04-02 12:00	07-04-02 16:00	[[] []
0410	09	Machine inner cylinder palm packers	40	- 	07-04-02 12:00	09-04-02 12:00	
0411	09	Remove LP3 rotor	5	2071	07-04-02 17:00	08-04-02 0:00	888 041 1418 8 2 7 1 1 1 0 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0424	09 09	Fit & bolt inlet pipes, bellows & spacers	40	·	08-04-02 0:00 08-04-02 0:00	09-04-02 0:00 10-04-02 0:00	
0408	09	Adjust shaft gland clearances Machine inner cylinder btm key packers	20	·		10-04-02 12:00	[:::::: ::::::::::::::::::::::::::::::
0409	09	Machine inner cylinder axial key packers	20	 	09-04-02 12:00	10-04-02 12:00	
0413	09	Fit inner cylinder axial key packers	5	- 	 	10-04-02 17:00	163 x 55 6 5 5 5 6 6 6 6 6 7 6 7 6 7 6 7 6 7
0414	09	Fit inner cylinder btm key & palm packers	20	172	10-04-02 12:00	11-04-02 12:00	কি লৈও কৰিক বিং লাভ কৰিক বিধান কৰিবলৈ। কি 0414 চন চৰিল চিড লাখেল লাভ কৰিবলৈ কৰিবলৈ। ইয়াও কৰিব হিন্তু হৈ কৰিবলৈ ইয়াৰ বিধান কৰিবলৈ কৰিবলৈ হৈ কৰিবলৈ। কৰিবলৈ কৰিবলৈ কৰিবলৈ কৰিবলৈ কৰিবলৈ কৰিবলৈ কৰি
0415	09	Renew spray cooling pipework	80	184	10-04-02 17:00	14-04-02 17:00	
0416	09	Prepare cylinder for final box up	5	·		11-04-02 17:00	\$1.78.53 39.58.6 33.48.6 HO416 3 F13.6 1 7 8.2.53 2.53.8 3 3 3 3 5 3 5 3 5 5 5 5 5 5 5 5 5 5 5
0417	09	Final fit LP3 rotor	5		11-04-02 17:00	12-04-02 0:00	
0418	09	Check rotor bumping clearances	3			12-04-02 3:00	111 11 11 11 11 11 11 11 11 11 11 11 11
0419	09	Fit & bolt top half inlet gland	1 4	172h	12-04-02 3:00	12-04-02 9:00	
0423	09 09	Refit front & rear gland housings & diffusers	7	1	12-04-02 13:00	12-04-02 17:00	
0420	09	Fit & bolt stage 1-4 top half diaphragms Fit & bolt stage 5-8 top half diaphragms	10	1	13-04-02 22:00	14-04-02 10:00	11 TO TO 11 COUNTY COUNTY OF THE DAY OF THE STREET OF THE
0421	09	Check rotor bumping clearances	3	ł	14-04-02 10:00	14-04-02 13:00	17 1 3 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0425	09	Fit & bolt top half inlet cylinder	25		14-04-02 13:00	15-04-02 17:00	#####################################
0426	09	Fit & bolt top half inner cylinder	25	ļ	15-04-02 17:00	16-04-02 19:00	33 7 3 7 3 7 3 1 1 1 3 3 3 1 1 3 3 3 3 3
0427	09	Complete spray cooling pipework	20	ļ		16-04-02 19:00	
0428	09	Refit & bolt hood	48	158h	16-04-02 19:00	18-04-02 21:00	
0429	09	Refit hood doors	4	323h	18-04-02 21:00	19-04-02 1:00	
0430	09	Bolt front & rear gland housings & diffusers	10	308h	18-04-02 21:00	19-04-02 7:00	83 t X t t t t t t t t t t t t t t t t t
0431	10	No.5 Pedestal	846 *	17h	25-03-02	02-05-02	0431
0432	10	Unboit & remove pedestal covers	6	 		25-03-02 16:00	
0433	10	Remove keep & top half No.8 bearing	4	125h		25-03-02 20:00	# t t t t t t t <u>t t t t t t t t t t t t</u>
0434	10	Split LP3/generator coupling	10			27-03-02 14:00	from the contraction of the tenter of
0435	10	Check LP3/generator alignment	5			27-03-02 19:00 27-03-02 23:00	
0436	10	Check Nos.8 & 9 bearing heights Journal, bearing & pedestal checks	10		27-03-02 19:00	28-03-02 5:00	
0438	10	Recheck LP3/generator alignment	1 5	ļ	29-03-02 10:00	29-03-02 15:00	1 1 3 1 4 4 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0439	10	Remove btm half No.8 bearing	1 1	148h	30-03-02 14:00	30-03-02 15:00	
0440	10	NDE No.8 bearing	5	123h	31-03-02 1:00	31-03-02 6:00	
0441	10	No.8 bearing dimensional checks	5	119h	01-04-02 5:00	01-04-02 11:00	[14 1 4 1
0442	10	Adjust No.8 bearing	5	54h	04-04-02 6:00	04-04-02 12:00	111111 11111 11111 0442
0443	10	Check No.8 bearing bedding	10	51h	04-04-02 15:00	05-04-02 1:00	111337 583 X 1 0443 1 5 5 5 5 5 5 5 6 1 1 1 1 1 1 1 1 1 1 1
0444	10	Refit btm half No.8 bearing	1	35h	05-04-02 18:00	05-04-02 19:00	
0445	10	Check LP3/generator alignment	5	30h	06-04-02 5:00	06-04-02 12:00	6 7 1 7 3 7 5 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7
0446	10	Size LP3/generator coupling spacer	5	207h	07-04-02 12:00	07-04-02 17:00	#8 6 6 8 8 8 # 2 8 6 8 8 9 8 1 2 8 8 10 4468 8 6 6 7 8 8 8 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0447	10	Machine LP3/generator coupling spacer	60		10-04-02 17:00	13-04-02 17:00	1:::::::::::::::::::::::::::::::::::::
0455		Check LP3/generator alignment	5	 	17-04-02 3:00	17-04-02 9:00	14 1 4 3 4 5 5 5 5 5 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1
0456	10	Adjust No.8 bearing	10		23-04-02 21:00 24-04-02 8:00		
0457 0448	10	Final LP3/generator alignment check Make LP3/generator coupling & set concentric	20	-	24-04-02 13:00	25-04-02 10:00	111111 (11111) 11111
0459	10	Set pedestal oil wipers	20			25-04-02 10:00	[
0449	10	Hone 4 off LP3/generator coupling bolt holes	6		25-04-02 10:00	25-04-02 16:00	13 1 3 3 3 3 3 3 4 4 1 1 2 7 8 3 3 3 4 4 4 4 1 4 4 3 3 3 3 4 4 4 4 9 3 3 4 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6
0450	10	Machine 4 off LP3/gen coupling bolt sleeves	6	-		26-04-02 9:00	16 1 4 6 1 1 1 2 4 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2
0451	10	Recheck LP3/gen coupling concentricity	4	1h		26-04-02 13:00	10451
0452	10	Complete LP3/gen coupling bolt hole honing	24	1h	26-04-02 13:00	27-04-02 14:00	#
0453	10	Complete LP3/gen coupling bolt sleeve machining	24	ļ	26-04-02 15:00	27-04-02 21:00	
0454	10	Split & clean LP3/generator coupling	10		27-04-02 14:00	28-04-02 0:00	
0458	10	Remake LP3/generator coupling & set concentric	15		28-04-02 16:00	29-04-02 7:00	0458.
0460	10	Fit pedestal flushing pipes	4	16h	29-04-02 8:00	29-04-02 12:00	113 4 51 11 4 8 6 1 1 2 5 6 6 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
0461	10	No.5 pedestal oil flush	5	-	30-04-02 3:00	30-04-02 8:00	0.463
0462	10	Remove pedestal flushing pipes	3		30-04-02 8:00 30-04-02 12:00	30-04-02 10:00 30-04-02 15:00	111111
0463	10	Fit & bolt top half No.8 bearing Check No.8 bearing keep nip	5		30-04-02 12:00	30-04-02 15:00	1 1 2 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
0465	10	Fit & bolt No.8 bearing keep	3	_	30-04-02 15:00	30-04-02 23:00	
0466	10	Fit & set supervisory equipment	10		01-05-02 13:00	01-05-02 23:00	[
0467	10	Fit & bolt pedestal covers	9		01-05-02 23:00	02-05-02 9:00	0467
0468	11	Generator	346 *	34h	25-03-02	29-04-02	E0469:
0469	11	Remove keep & top half No.9 bearing	4	135h		26-03-02 1:00	in it to 469 and the entropy of the first of the control of the co
0470	11	Fit & bolt No.9 bearing top half & keep	6	81h	29-04-02 8:00	29-04-02 14:00	138681 (1881) (1861) (1861) (1861) (1861) (1861) (1861) (1861)
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		ystems, Inc.					

Phil Hailes' Print Outs Proceed This Sheet

From: Richard Houston

To: Dave Spence; James Nelson; Phong Do

Date: 2/4/03 12:55PM

Subject: Measurements for 8th stage diaphragm

I have attached two data sheets for measurements on the 8th stage diaphragm. I would like to get this info while the Fero arm is here for Alstom. Even if we don't install the spare 8th stage diaphragm in the IP this info will be helpful in the future.

On the rotor wheel diameters (cover and root radial seal) we need the 8th stage in particular but info on all the stages would be great to have if they are going to be taking the data anyway.

Thanks for your help in this.

By the way - these can be printed out by using Windows imaging, selecting 11×17 paper, and printing to fit the page.

If you can see some changes needed let me know

Rick

cc: Kelly Cloward

<kevin.spires@power.alstom.com>

To:

"Phong Do" <PHONG-D@ipsc.com>

Date: Subject: 4/8/03 9:51AM Outage Programme

Hi Phong

Try this.

It doesn't have an IP but you may be able to work out what needs doing to insert your own IP portion.

If I can be of any further help just let me know.

If not I will see you next Tuesday.

Regards

Kevin

This is the best we can do at this time & have attached as a PDF and compressed Suretrak back up. I assume you have Primavera

Susqanna HP 3LP replant

(See attached file: Hplp.prx) (See attached file: SureTrak_ HPLP.pdf)

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

From: Phong Do

To: kevin.spires@power.alstom.com

Date: 4/23/03 8:35AM

Subject: Re: Intermountain IP Rotor Cooling

Kevin,

Thanks for the comments and efforts of finding the root-caused problem and alternative. However, there was not an explanation for the increased of the IP cooling absolute temperature. The U1 IP cooling current temperature is about 14F and 16F higher than U2 & U1 preoutage, respectively. Would you please:

- 1. Double check and send us a heat balance diagram for U1 showing all HP stages steam conditions $(P,T,\ h...)$.
- 2. Provide some comment regarding IP rotor creep life that effected by 940F IP cooling.
- 3. Some reasons why the IP cooling temperature is higher
- 4. Resolution to cool the IP cooling steam.

I double checked the U1 IP double flow (9th stage) diaphragm packing, spill strip radial clearances, the L' wheel to diaphragm axial clearances and found that all clearances are within GE spec and the as-lefts were also close to the as-founds. The U1 IP double flow (IPDF) stage was also replaced with spare one during this outage. No mechanical damages or concern were noted at the as-left. Noticed that we also replaced the IPDF on Unit 2.

Even there were higher temperature response (with the IP cooling steam flow) between the GE and TE (for both units), we are not looking for resolution to even out the differences between the GE and TE. As we tracked back 365 days, the IPDF (of both units) show that there was a consistently temperature differences between the TE and GE. But they were never came in alarm. If we can cool down the U1 IP cooling by 14F, there would not be any alarm.

Mike and I both look at the IP cooling drain line and orifice and agreed that the orifices are for draining only and not for cooling.

One possible resolution is to tight the cold reheat (exhaust) into the IP cooling (at proper position, pressure location) to cool the cooling steam.

GE is not recommending us the raise the alarm set point.

Our plant manager is quite concern about the alarm. He would like to resolve this ASAP. Please help. Thanks.

CC: Alan.holmes@power.alstom.com; robert.brown@power.alstom.com; robert.cunningham@power.alstom.com

From: Phong Do

To: Aaron Nissen; Dave Spence; James Nelson; Jerry Hintze

Date: 4/16/03 9:33AM Subject: Response from GE

FYI, reponse from GE regarding U1 IP cooling.

"Phong, Hope this info helps. Bob, The design of the unit requires that the temperature of the 8th stage be controlled to the values provided. There is no "margin" in this number. This value was established during the design of the unit and the flow engineered to produce that result. The issue is with the long term rupture life of the rotor bore, wheel and dovetail.

The 8th stage wheelspace temperature is a function of the cooling flow, the cooling steam temperature and the condition of the 8th stage diaphragm. The cooling flow comes from the 2nd stage of the HP turbine and is controlled by the cooling steam valve (SRCV). As the condition of the 8th stage deteriorates the cooling valve (SRCV can be opened to pass additional cooling flow, and lower the 8th stage wheelspace temperature. Before proceeding the following should be reviewed:

- 1) Is the cooling valve (SRCV) wide open so that no additional cooling steam can be admitted into the 8th stage wheelspace?
- 2) Has the temperature been increasing gradually, or has it always been high?

Having a 20F difference between units is not unrealistic as the temperature is controlled by the position of the cooling valve (SRCV) and each unit might be set differently and have slightly different flow areas."

Richard Houston

To:

Dave Spence; Phong Do

Date:

2/12/03 2:46PM

Subject:

8th stage diaphragm snout bore measurements

Attached is a chart showing the measurements we need to get for the spare 8th stage diaphragm cooling steam snout bore so the rings can be finish machined.

Rick

CC:

Kelly Cloward

Name	Adderss	Size

Mike Ally	98 North 100 East Hinckley UT 84635	XL
Will Lovell	6260 N 2000 W Delta UT 84624	XL
Brad Thompson	220 W 100 N Delta UT 84624	XXL
Kelly Cloward	518 E 280 N Delta UT 84624	XL
Dave Spence	35 E 175 N Oak City UT 84649	XL
Phong Do		
Craig Teeples	260 W 300 S Fillmore UT 84631	XL
Neal Abbott	3755 W 2500 N Delta UT 84624	XXL
Steve Anzures	3470 W 4500 S Oasis UT 84650	XL
Randy Fields	59 W 300 N Hinckley UT 84635	XL
Mike Gould	1316 N 325 E Nephi UT 84648	XL
Shaun Harris	P.O. Box 684 Delta UT 84624	XL
Neno Hoelzle	1475 W Ashby Rd Delta UT 84624	XL
Phil Jensen	4275 N 3000 W Delta UT 84624	XL
Russ Mangelson	880 E 400 N Nephi UT 84648	XXL
Doyce Olpin	1401 N 550 E Nephi UT 84648	XL
Kelly Oppenheimer	2015 N 3000 W Delta UT 84624	
Randy Riding	496 W 200 N Hinckley UT 84635	XXL
Rick Wagstaff	P.O. Box 354 Delta UT 84624	ΧĽ
Tony Wright	370 S 350 W Delta UT 84624	XXL
Mike Anderson	100 W 50 N Oak City UT 84649	XL
Clarke Christensen	245 N 100 W Oak City UT 84649	XL
Corry Carrol	456 S 320 W Delta UT 84624	L
Ken Crafts	P.O. Box 1111 Delta UT 84624	XL
Preston Eliason	4400 W 4500 S Hinckley UT 84635	L
Wayne Gasser	5053 W 2500 N Delta UT 84624	XXL
Paul McCollaum	7170 W 2500 N Abraham UT 84635	XL
Dan Pack	P.O. Box 38097 Leamington UT 84638	XL
Stewart Rowley	P.O. Box 2 Oak City UT 84649	XXL
Dean Smith	1546 W 1500 S Delta UT 84624	XXL
Wayne Spencer	1095 W Ashby Rd Delta UT 84624	XL
Elven Stokes	P.O. Box 38071 Learnington UT 84638	XXL
Bob Terry	6405 N 3000 W Delta UT 84624	XXXL

<robert.cunningham@power.alstom.com>

To:

<phong-d@ipsc.com>

Date:

4/25/03 10:12AM

Subject:

Intermountain IP Rotor Cooling

Hello Phong

Please find attached a sketch showing our proposal.

Can you please confirm the sketch shows the configuration of your existing pipework (both in terms of pipe sizes and orientation of valves, orifices etc)

Can you please provide the T and P of the IP rotor cooling pipework prior to both the Unit 1 and 2 outage, and if possible the flows.

Our engineer would like to size a new control orifice in the existing pipework and will provide a new orifice in the extension to the pipework.

Can you please comment on our proposal.

Regards

Rob C

----- Forwarded by Robert CUNNINGHAM/GBRUG01/Power/ALSTOM on 25/04/2003 16:53 -----

Alan LANG 25/04/2003 15:46

To:

Robert CUNNINGHAM/GBRUG01/Power/ALSTOM@GA, Alain

FOOTE/LTR/STG/PGD/GECALSTHOM@GA

cc:

Subject: Intermountain IP Rotor Cooling

Rob,

We hope to emulate the original cooling steam flow and temperature by suitable mixing of stage #3 extraction and CRH steam.

In order to do this we require the cooling steam pressure and temperature (and flow if measured as different from design of 11,000 lb/hr) just upstream of the IP Cylinder connection so that we can advise suitably sized restriction orifices.

Attached is the proposed layout based on what we know of the system. check valve is necessary so that we do not vent away the IP rotor warming steam during the warm-up phase.

Please ask Client for this information and to comment on the attached

sketch.

Regards,

Alan

(See attached file: Rotor_Cooling.tif)

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

Richard Houston

To:

Dave Spence; Phong Do

Date:

2/12/03 2:46PM

Subject:

8th stage diaphragm snout bore measurements

Attached is a chart showing the measurements we need to get for the spare 8th stage diaphragm cooling steam snout bore so the rings can be finish machined.

Rick

CC:

Kelly Cloward

<robert.cunningham@power.alstom.com>

To:

<phong-d@ipsc.com>
4/25/03 10:12AM

Date: Subject:

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Intermountain Unit 1 IP Rotor 8th Stage/IP Rotor Cooling Temperatures.

IPS have identified a concern with the IP Rotor 8th Stage/IP Rotor Cooling, since some of the temperature readings are close to the operational alarm limits. They have suggested that this is due to the cooling steam temperature being hotter on Unit 1 than was is on Unit 2.

We have been studying the information that we have collated and can make the following observations:-

Based on the instrumentation readings we have received from site:-

- there is a temperature difference of only about 14°F between Unit 1 and Unit 2 in the cooling steam pipe.
- it would appear that the TE rotor flow is being starved of cooling steam flow.
- the GE rotor temperature is satisfactory, even with low cooling steam flows (total cooling flow of 8,000lbs/hr).
- when we plot the temperature drop of TE and GE, we see that the cooling steam flow has a much larger effect on the GE thermocouple, thus further suggesting that TE is receiving reduced flow of cooling steam.

We have looked at the design of the original inlet gland/diaphragms and note the following differences between the TE and GE design.

- the GE diaphragms (fixed blades) are integral with the inlet gland.
- the TE diaphragms are carried by the inlet gland.
- if the pressure face of the TE diaphragm has been damaged during the outage, or the inner ring half joint opens in service, the pressure adjacent to the disc may increase, causing a reduced cooling steam flow in the TE direction.

Reasons why you may have a starved flow of steam at TE are:-

- differences in radial clearance of front (TE) and rear (GE) gland segments.
- damage to TE diaphragm pressure face.
- Inner ring of TE diaphragm opening up in service (or open when rebuilt).

We have also studied the As Built Records of both HP Retrofit Unit 1 and 2 and can confirm that there are no differences between the 2 machines, in terms of build clearances, etc which might otherwise have caused a difference in the cooling steam temperature.

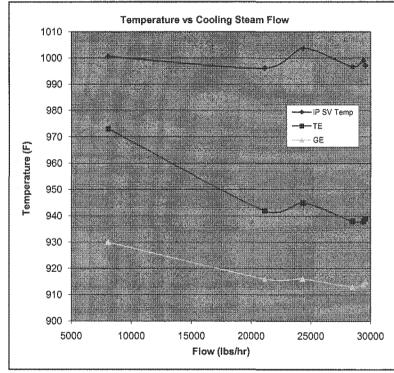
We therefore conclude that the main issue is the difference between front and rear flows, rather than the absolute temperature itself.

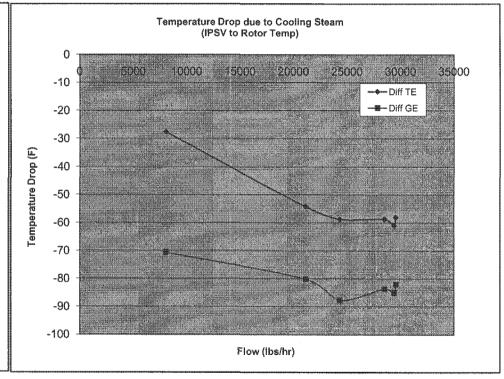
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Will Lovell	6260 N 2000 W Delta UT 84624	XL
Brad Thompson	220 W 100 N Delta UT 84624	XXL
Kelly Cloward	518 E 280 N Delta UT 84624	XL
Dave Spence	35 E 175 N Oak City UT 84649	XL
Phong Do		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Craig Teeples	260 W 300 S Fillmore UT 84631	XL.
Neal Abbott	3755 W 2500 N Delta UT 84624	XXL
Steve Anzures	3470 W 4500 S Oasis UT 84650	XL
Randy Fields	59 W 300 N Hinckley UT 84635	XL
Mike Gould	1316 N 325 E Nephi UT 84648	XL
Shaun Harris	P.O. Box 684 Delta UT 84624	XL
Neno Hoelzle	1475 W Ashby Rd Delta UT 84624	XL
Phil Jensen	4275 N 3000 W Delta UT 84624	XL
Russ Mangelson	880 E 400 N Nephi UT 84648	XXL
Doyce Olpin	1401 N 550 E Nephi UT 84648	XL
Kelly Oppenheimer	2015 N 3000 W Delta UT 84624	
Randy Riding	496 W 200 N Hinckley UT 84635	XXL
Rick Wagstaff	P.O. Box 354 Delta UT 84624	XL
Tony Wright	370 S 350 W Delta UT 84624	XXL
Mike Anderson	100 W 50 N Oak City UT 84649	XL
Clarke Christensen	245 N 100 W Oak City UT 84649	XL
Corry Carrol	456 S 320 W Delta UT 84624	L
Ken Crafts	P.O. Box 1111 Delta UT 84624	XL
Preston Eliason	4400 W 4500 S Hinckley UT 84635	L
Wayne Gasser	5053 W 2500 N Delta UT 84624	XXL
Paul McCollaum	7170 W 2500 N Abraham UT 84635	XL
Dan Pack	P.O. Box 38097 Leamington UT 84638	XL
Stewart Rowley	P.O. Box 2 Oak City UT 84649	XXL
Dean Smith	1546 W 1500 S Delta UT 84624	XXL
Wayne Spencer	1095 W Ashby Rd Delta UT 84624	XL
Elven Stokes	P.O. Box 38071 Leamington UT 84638	XXL
Bob Terry	6405 N 3000 W Delta UT 84624	XXXL

Flow	IP SV Temp	TE	GE
29572	997.1	939	915
29403	999	938	914
28491	996.7	938	913
24329	1003.7	945	916
21138	996.2	942	916
8053	1000.6	973	930
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Flow	Diff TE	Diff GE
29572	-58.1	-82.1
29403	-61	-85
28491	-58.7	-83.7
24329	-58.7	-87.7
21138	-54.2	-80.2
8053	-27.6	-70.6





IP7008403



FAX

Power Steam Turbines

To: Phong Do

Turbine & QA Lead Engineer

Fax: 00 1 435 864 0775

cc: A. Bramley, Retrofit Project Management

From: Gary Randle

Project Support Group (Quality)

Tel: 01788 531957 Fax: 01788 531281

E-mail: gary.randle@power.alstom.com

N° of pages; 6

Date: 11 March, 2002

Subject: INTERMOUNTAIN 1 HP ROTOR

Please find attached a copy of the Stage 2 Ultrasonic & Visual reports for the Intermountain 1 HP Rotor, as requested.

Regards

Newbold Road Rugby, Warwickshire CV21 2NH England Tel.: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power UK Ltd Registered Office: Lindum House Sewell Road Lincoln, LN2 5RY Registered in England No. 476835

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Date: 1/27/03 2:28AM Subject: Unit 1 Shipping

Hi Phong

Here is a list of everything you will receive at site.

Wally will be there to do a full inventory as discussed during the week prior to the outage.

Regards

Kevin

(See attached file: Shipping Docs.pdf)

CONFIDENTIALITY:

This e-mail and any attachments are confidential and may be privileged. If you are not a named recipient, please notify the sender immediately and do not disclose the contents to another person, use it for any purpose, or store or copy the information in any medium.

cc: <wally.falconer@power.alstom.com>

ALSTOM

Account No.

Attn: Ms Joan Vandenburgh/Mr Bill Eisma ALSTOM Power Inc. Accounts Payable 2800 Waterford Lake Drive Midlothian, VA 23112 USA

INVOICE

Your Order: 100318-OG

Our Order: 763R0529/02/001

Advice Note:

R3006 Date of Advice:

14/01/2003 Terms of Payment:

SEE 001

EC Commodity Code:

Originator:

Invoice No:

VAT Reg No.

VAT Group No.

Date:

K.Spires

Tel No.

+44 (0) 1788 531979

GB 728 4619 11

TS00315-25

14-Jan-03

105

End user (if other than above)

Intermountain Power Service Corporation

Despatched per:

Sea Freight

Payment Instructions:

Pay: Via:

ABN Amro Bank NV, London. Swift code: - ABNAGB2L

ABN Amro bank NV, New York.

CHIPS 007535 ABA 958

ABNAUS33 Swift Code:

in favour of:

ALSTOM Power UK Ltd - Large Turbines Rugby

A/c: 40071456

Case No.	Dimensions GRS	WT NETWT	Country of Origin	Currency:	USD
3275c	370cm x 234cm x 349cm 37,30	X0kg 34,300kg	England		
SHIPPING			*		
	ALSTOM Power, Inc.		_		1 1
	C/O Intermountain Power S		ion		
	Intermountain Generating				1
	850 W. Brush Wellman Ro	ad			
	Delta				
	Utah 84624 - 9546				1 1
	USA			4 ************************************	
	FAO : Mr Phong Do				
	ALSTOM Power Inc P.O Number	: 100318 - OG		**CALLEGE	
	IPSC PO Number : 314870				
	HP Turbine Inner Cylinde	r Module			1
	"For Steam Tyrrbine"				1 1
•		•			
	Value for Cristoms Only	U\$\$ 2,11	0,000.00 Total	\$0.0	o
	KUIN Ja	Dines.			- dissolditi
,,	Certified True and Cornets		FOB UK Port	maids-Plana	
EC Custom	er	Authorised			1
VAT Reg. N		Signature:			
VAT Indicat	tor: B	Basic Price	:	\$0.0	이
CARAT Coo				1	
Tax Point	14-Jan-03	VAT at:	0.00%	0.0	1
ARREST		L	INVOICE TO	DTAL: \$0.0	

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power Ltd. Rugby, Warwickshire Registered in England No. 4347573

ALST	6 _M	Customer Service Section R6076					
	18 18	HOME / EX	PORT NOT	IFICATION			
Exporter			Vehicle Bkg. I	Ref. Customs P	leference/Status	Tariff Heading	
			Invoice No.		Exporter's Refe	erence	
difference and the second					Exports: 5 (16)	51 51 750	
			Customer's R	eference	F/Agents Ref.	SS Co. Bkg. No.	
Consignee (If "Order" S	State Notify Party and Address)		Supplier				
Forwarding Agent/Merc	:hant		ALSTOM Willans W Newbold I Rugby Warwicksl CV21 2NH	orks Road hire			
, on a said			England				
Afternation of the state of the			Country of Orig		Country of Destinati	on	
000-00-00-00-00-00-00-00-00-00-00-00-00				UK	- In the second	JSA	
Receiving Date(s)	Dock, Container Base	etc,	Terms of Deliv	ery and Payment			
Inspection Release Nur	nber(s)		Purchase Orde	or No.	Supplier's Reference	e	
Vessel/Aircraft Etc.	Port of Loading		Contract No.	9/02/199/018	Despatch Date		
Port of Discharge	Port of Discharge Place of Delivery by On-Carrier				Import Permit	The state of the s	
Marks and Numbers		Number and Kind of Pag	kages	Addalah		T	
and Containers No.		Description of Good	ais	National dist			
Case No. 3275C			ght (cms) 349	Net Wt. (kg) 34300	Gross Weight (kg)	Cube (M³)	
32/50	370	204	343	34300	37300	30.22	
Shipping Mark:					Net Weight (kg) 34300	0.0 0.0 0.0 FOB Value £	
	the energy of						
Piece	HP Inner Cylinder Assy & Slings	y Intermounta	ain	Consignment Value			
Spec. Stow				Total CDV/FMV	Invoice Total (State	Currency)	
				Total Net Wt. (kg) 34300	Total Gross Wt. (kg) 37300	Total Cube (M³) 30.22	
					ny and Telephone Num	ber 44 1788 577111	
				Name of Authorised	Signatory	77 1700 0//111	
				Mr G Hirons Place and Date of Its Forwarding, F		14/1/03	
				Signature			

14 January 2003

i:\forward\a notes 2003 - (january-february)\warning notes 2001 (from july 2001)\v6075.doc

PACKING SPECIFICATION FOR EWE R6076

CONTRACT:

INTERMOUNTAIN

PO RO 100318 - OG \ CUST. ORDER 314870 INTERMOUNTAIN UNIT 1

CONTRACT NO: CUSTOMER REF:

INSP RELEASE: 019,023

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP.

850 WEST BRUSH WELLMAN RD. DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLAMS WORKS NEWBOLD ROAD

SHEET 1 OF 1

DATE :14/01/2003

CONTACT:	MR.G.HIRONS	3	TEL	01788 531053	oemiav I Ot f	DWTB : T4\0T\500			-
CASE	LENGTH D	WIDTH IMENSIONS	(Cm) HBIGHT	CAPACITY CUBIC (m)	GROSS	RIGHT (kg)		医舒服性 医皮肤 医皮肤 医皮肤 医皮肤 医皮肤	~~
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2BMBR0000020			6900MM LG 1	NO ADJ	i .	E247/2239G01 W247/1983P03	3	2BMBR0000020	s water
2BMBR0000021		SLINGS	EES		2	B247/2239G01 W247/1918P18	. 3	2EMBR0000021	# ** ** %.
2BMBR0000074	क १९५७ - १९५४ का - अवस्थित प्रदेशको स्थापना स्थिति । प	SLINGS HP IN	ER CYLINDE	R ASSEMBLY		B202/5366G01		2 13/IBR0 000074	· · · · · · · · · · · · · · · · · · ·

ALSTOM Power Ltd RUGBY WORKS Lloyds Approved to ISO 90012000
This is to certify that all the torns to the shipment dataled above have been sebject to our inspection for adherence to the requirements of the Contract Document and/or Subsequent amendments and to the relevant design requirements and/or codes of practice

ALSTOM

INVOICE

100318-OG

763R0529/02/001

Your Order:

Our Order:

Advice Note:

R3006

Account No.

Attn: Ms Joan Vandenburgh/Mr Bill Eisma ALSTOM Power Inc. Accounts Payable 2800 Waterford Lake Drive Midlothian, VA 23112

USA

Date of Advice: 14/01/2003 Terms of Payment:

SEE 001

EC Commodity Code:

Payment Instructions:

Tel No.

Invoice No:

VAT Reg No.

VAT Group No.

Originator:

Date:

105 K. Spires

+44 (0) 1788 531979

GB 728 4619 11

TS00314-25

14-Jan-03

End user (if other than above)

Intermountain Power Service Corporation

Despatched per:

Sea Freight

Pay:

ABN Amro Bank NV, London. Swift code: - ABNAGB2L

Via:

ABN Amro bank NV, New York. CHIPS 007535 ABA 958

Swift Code:

ABNAUS33

In favour of: A/c:

ALSTOM Power UK Ltd - Large Turbines Rugby

40071456

3274c 624cm x 169cm x 186cm 17500kg 15400kg England SHIPPING MARK ALSTOM Power, Inc. C/O Intermountain Power Service Corporation	
ALSTOM Power, Inc.	
Intermountain Generating Station (Unit 1)	
850 W. Brush Wellman Road	
Delta	
Utah 84624 - 9546	
USA	
FAO: Mr Phong Do	
ALSTOM Power Inc P.O Number: 100318 - OG	
IPSC PO Number: 314870	
HP Turbine Rotof	
"For Steam Tyfbine"	
Valup 44 Customs Only US\$ 1,014,000.00 Total \$0.00	
Kan paine	
Certified True and Correct FOB UK Port	
EC Customer Authorised	
VAT Reg. No. Signature:	
VAT Indicator: B Basic Price: \$0.00	
CARAT Code: 9159	Abrachtannann.
Tax Point 14-Jan-03 VAT at: 0.00% 0.00	
INVOICE TOTAL: \$0.00	······································

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power Ltd. Registered Office Newbold Road Rugby, Warwickshire Registered in England No. 4347573

ALST	Ô)M	Custome	er Service S	Section		R6075		
		HOME / EXP						
Exporter			Vehicle Bkg. F	Ref. Customs	Reference/Status	Tariff Heading		
			Invoice No.		Exporter's Re	ference		
			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Experior 5 ris	iorence		
			Customer's Re	eference	F/Agents Ref.	SS Co. Bkg. No.		
Consignee (If "Order" Sta	ate Notify Party and Address)		Supplier					
			ALSTOM Willans W Newbold F Rugby Warwicksl CV21 2NF	orks Road nire				
Forwarding Agent/Merch	ant		England					
en de constante de la constant			Country of Orig	gin of Goods	Country of Destina	tion		
				UK		USA		
Photo de la	Dock, Container Bar		Town of Dalis	ery and Payment				
Receiving Date(s)		se etc.						
Inspection Release Numb	per(s)		Purchase Orde	r No.	Supplier's Referen	ce		
Vessel/Aircraft Etc.	Port of Loading		Contract No. 781R052	9/02/199/018	Despatch Date			
Port of Discharge	Place of Delivery by	On-Carrier	Insured Value	(State Currency)	Import Permit			
Marks and Numbers and Containers No.		Number and Kind of Pac Description of Good	kages s					
Case No.	Length (cms) W	•	ght (cms)	Net Wt. (kg)	Gross Weight (kg)	Cube (M ³)		
3274C	624	169	186	15400	17500	19.61		
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Shipping Mark:					Net Weight (kg)	FOB Value £		
Outphis war.					15400			
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Case	HP Rotor Assembly	Intermounta	in	Consignment Valu	DO CPA			
Spec. Stow				Total CDV/FMV	Invoice Total (State	• •		
				Total Net Wt. (kg) 15400	Total Gross Wt. (kg 17500) Total Cube (M²) 19.61		
				Signatory's Compa	any and Telephone Nu	mber		
				ALSTOM Po Name of Authorise	wer Inta- ed Signatory	44 1788 577111		
				Mr G Hirons Place and Date of	Issue			
				Forwarding, Signature		14/1/03		
				2.3				

14 January 2003

PACKING SPECIFICATION FOR EWN. R6075

CONTRACT:

INTERMOUNTAIN

CONTRACT NO:

PO NO 100318 - OG \ COST. ORDER 314870 INTERMOUNTAIN UNIT 1

CUSTOMER REF:

IMSP RELEASE:018

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP.

HP ROTOR - MACHINGING

850 WEST BRUSH WELLMAN RD.

DELTA

UTAH 84624. USA

PACKED AT : ALSTOM POWER UK LID.

WILLAMS WORKS NEWBOLD ROAD

SHEET 1 OF 1 DATE :14/01/2003 CONTACT: MR.G. HIRONS 01788 531053 CASE DIMENSIONS (CID) CAPACITY LENGTH WIDTH HEIGHT CUBIC (m) 3274C 624 169 186 19.6148 17500 15400 ITEM REFERENCE DESCRIPTION QUANTITY 2EMBR0000018 HP ROTOR ASSEMBLY 2BMBR0000018 B201/3250G01

ALSTOM Power Ltd RUGBY WORKS Lloyds Approved to ISO 90012000 This is to certify that all the Berns in the shipment detailed above have been subject to our inspection for adherence to the requirements of the Contract Document and/or Subsections amendmarks and to the relevant design requirements and/or codes of practice

ALSTOM

INVOICE

Account No.

Attn: Ms Joan Vandenburgh/Mr Bill Eisma ALSTOM Power Inc. Accounts Payable 2800 Waterford Lake Drive

Midlothian, VA 23112

USA

Your Order:

100318-OG

Our Order:

763R0529/02/001

Advice Note: R3006

Date of Advice: 14/01/2003

Terms of Payment: SEE 001

EC Commodity Code: Payment Instructions: Originator:

Tel No.

Invoice No:

VAT Reg No.

VAT Group No.

Date:

105

K.Spires

+44 (0) 1788 531979

T500316-25

GB 728 4619 11

14-Jan-03

End user (if other than above)

Intermountain Power Service Corporation

Despatched per:

Sea Freight

Pay:

ABN Amro Bank NV, London. Swift code: - ABNAGB2L

Via:

ABN Amro bank NV, New York. CHIPS 007535 ABA 958

Swift Code:

ABNAUS33

In favour of: A/c:

ALSTOM Power UK Ltd - Large Turbines Rugby

40071456

GRS WT NET WT Country of Origin USD Case No. Dimensions Currency: 3273c 109cm x 109cm x 89cm 1000kg 900kg England SHIPPING MARK ALSTOM Power, Inc. C/O Intermountain Power Service Corporation Intermountain Generating Station (Unit 1) 850 W. Brush Wellman Road Delta Utah 84624 - 9546 USA FAO: Mr Phong Do ALSTOM Power Inc P.O Number: 100318 - OG IPSC PO Number: 314870 Miscellaneous Items "For Steam Turbine" US\$ 164,000.00 Total \$0.00 stoma Only True and Comec FOB UK Port EC Customer Authorised VAT Reg. No. Signature: VAT Indicator: В Basic Price: \$0.00 9159 CARAT Code 14-Jan-03 VAT at: 0.00% 0.00 Tax Point INVOICE TOTAL: \$0.00

Newbold Road Rugby, Warwickshire CV21 2NH England Tel: +44 (0) 1788 577111 Fax: +44 (0) 1788 531700

ALSTOM Power Ltd. Newbold Road Rugby, Warwickshire Registered in England No. 4347573

ALSTO M	Custo	mer Service S	Section		R6074		
	HOME / I	EXPORT NOTI					
Exporter		Vehicle Bkg. R	ef. Customs Re	ference/Status	Tariff Heading		
		Invoice No.		Exporter's Refe	rence		
		Customer's Re	ference	F/Agents Ref.	SS Co. Bkg. No.		
Consignee (If "Order" State Notify	Party and Address)	Supplier	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		L		
Forwarding Agent/Merchant		ALSTOM I Willans Wo Newbold F Rugby Warwicksh CV21 2NH England	orks Road nire				
		Country of Orig	in of Goods	Country of Destination	on		
			UK		JSA		
Receiving Date(s)	Dock, Container Base etc.	Terms of Delive	ery and Payment		TO SERVICE AND SEED A		
Inspection Release Number(s)		Purchase Orde	r No.	Supplier's Reference	θ		
Vessel/Aircraft Etc.	Port of Loading		9/02/199/018	Despatch Date			
Port of Discharge	Place of Delivery by On-Carrier	Insured Value (State Currency)	Import Permit			
Marks and Numbers and Containers No.	Number and Kind o Description of						
Case No. Lengt	h (cms) Width (cms)	Height (cms)	Net Wt. (kg)	Gross Weight (kg)	Cube (M³)		
3273C 1	09 109	89	900	1000	1.06		
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Shipping Mark:				Net Weight (kg) 900	FOB Value £		
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Case Detail	s Intermo	ountain	Consignment Value	CPA			
Spec. Stow			Total CDV/FMV	Invoice Total (State	Сиггелсу)		
			Total Net Wt. (kg) 900	Total Gross Wt. (kg)	Total Cube (M³)		
			Signatory's Compa ALSTOM Pov	ny and Telephone Nur	nber -44 1788 577111		
			Name of Authorised Mr G Hirons	d Signatory			
			Place and Date of I		1.4/1./02		
			Forwarding, F	iugby	14/1/03		

14 January 2003

l:\forward\a notes 2003 - (january-february)\warning notes 2001 (from july 2001)\r6074.doc

PACKING SPECIFICATION FOR EWN R6074

CONTRACT:

. - . . - - .

INTERMOUNTAIN

CONTRACT NO:

PO NO 100318 - OG \ CUST. ORDER 314870 INTERMOUNTAIN UNIT 1

CUSTOMER REF:

INSP RELEASE: 020, 021, 022, 024, 025, 026, 027

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP.

850 WEST BRUSH WELLMAN RD.

DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LID.

WILLIAMS WORKS

MEMBOLD ROAD

CONTACT:	MR.G.HIROWS	had have they was nim day may was	TKL	531053	SHKET		_		TB :14/01/2003
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2BMBR0000011			B DIDE TINDER TRUK-OF	P PIPE CONNECTI	ON .	B202/5397G01 D202/5349P01	ı	2BMBR0000011
2BMBR0000014			LINDER LEAK-OF POSITION GAUG		ON	E247/2565G01 D247/2483P09	1	2EMBR0000014
2BMBR0000015	• • •		POSITIONING A TON GAUGE LABE		1	8247/2565G01	2	2EMBR0000015
2EMBR0000016			POSITIONING A	SSEMBLY	1	D247/2564P01 8247/2565G01	3	2BMBR0000016
2BMBR0000017	ip var yn drai'r wrondlyndaisteisiallynastates da'r belad	ROTOR	POSITIONING A	SSEMBLY	a gal municalistici vidi g. t. et sindoje d priestitica. Vadimentementelis	W247/1970P01 B247/2565G01	ty continue and transferringly games a symmetric stress.	n nan hili vil er yani i nimaan mena anagalanen hila ena li uu li uu aan lii ahii kiraya.
		F4005 ROTOF	66A12) POSITIONING A		•	21437083	4	2BMBR0000017
2BMBR0000023		-	CE WEIGHT TOR - MACHININ	r.	10	B201/3250G01 D201/2968P02	3	2BMBR0000023
		**** ***		•		•		

Kevin Spires a pages Poores

PACKING SPECIFICATION FOR BWN R6074

CONTRACT: CONTRACT NO:

INTERMOUNTAIN
PO NO 100318 - OG \ CUST. ORDER 314870
INTERMOUNTAIN UNIT 1

CUSTOMER REF:

INSP RELEASE: 020, 021, 022, 024, 025, 026, 027

E201/3250G01

D201/3033P05

B201/3250G01

D201/3033P06

10

2BMBR0000029

2EMBR0000030

SUPPLIED TO:

2BMBR0000029

2BMBR0000030

INTERMOUNTAIN POWER SERVICES CORP.

BALANCE WEIGHT 16G

BALANCE WEIGHT 24G

HP ROTOR - MACHINING

HP ROTOR - MACHINING

850 WEST BRUSH WELLMAN RD.

DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLARS WORKS NEWBOLD ROAD

CONTACT:	MR.G.HIRONS		TEL	01788 531053	SHEET 2 OF 7	DATE :14/01/200	3		
CASE	DI Length	MENSIONS WIDTH	HRIGHT (CZE)	CAPACITY CUBIC (m)	GROSS	BIGHT (kg) NET	·住戶上水東南日中 行籍	等品的重要的证明的证据的证明的证明的证明的证明的证明的证明的证明的证明的证明的证明的证明的证明的证明的	F 本 本 本 本
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2BMBR0000026	· •	BALAN	TOR - MACHI CE WEIGHT 8	9 G	4	B201/3250G01 D201/3034P06	6	2BMBR0000026	
28MBR0000027	•	5/16* REW		SOCKET SET SC	10	B201/3250G01 D297/1149P03	7	2BMBR0000027	n nog
28MBR0000028		BALAN	TOR - MACHI CE WEIGHT 1	5G	3	B201/3250G01 D201/3033P04	8	2BMBR0000028	
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3

PACKING SPECIFICATION FOR SHM R6074

CONTRACT:

CONTRACT NO:

INTERMOUNTAIN
PO NO 100318 - OG \ CUST. ORDER 314870
INTERMOUNTAIN UNIT 1

CUSTOMER REF:

INSP RELEASE:020,021,022,024,025,026,027

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP. 850 WEST BRUSH WELLMAN RD. DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLIAMS WORKS NEWBOLD ROAD

CONTACT:		MR.G.HIRONS	TEL	01788 531053	SHEET 3 OF 7	DATE :14/01/2003
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3273C	109	109	89	1.0574	1000	900		
ITEM REFERENCE		DESCRI	(PTION		QUANTITY	DRAWING NO	ITEM	# * # # # # # # # # # # # # # # # # # #
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		CR -HP ROI	TOR - MACHIN	SOCKET SET S	40	E201/3250G01 D297/1001P03	4 4	2BMBR0000031
2BMBR0000032		SRAL I HP INI		ON ASSEMBLY	12	R202/5387G01 W202/5335P01	1004	2BMBR0000032
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- · · · · · · · · · · · · · · · · · · ·		HP INI	ET CONNECTI	ON ASSEMBLY		DZ02/5390P01		***************************************
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			BT CONNECTI	V.TOMSZZA W	12	B202/5387G01 D297/1000P08	5	2BMBR0000036
2BMBR0000041		CASING	INSERT		1	B202/5396G01 D297/1119P01	ı	2BMBR0000041
		HP CYL	INDER INTER	FACE		2621/17773601		

PACKING SPECIFICATION FOR BWN R6074

CONTRACT:

INTERMOUNTAIN

PO NO 100318 - OG \ CUST. ORDER 314870 CONTRACT NO:

CUSTOMER REF:

INTERMOUNTAIN UNIT 1

INSP RELEASE:020,021,022,024,025,026,027

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP.

850 WEST BRUSH WELLMAN RD.

DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLAMS WORKS

NEWBOLD ROAD

CONTACT:	MR.G.HIRO)NS	TEL	01788	531053	SHEET	4 OP	7	DATE	:14/01/2003			
CASE	LENGTH	DIMENSIONS WIDTH	(cm) HBIGHT		APACITY UBIC (m)	- auto-mater-ratio - enter-tigor appr lation	GRO:	WEIGH SS	T (kg)	NET	n-sis an er an-dir dir dit sit sie	·····································	大台灣 無金色金
3273C	109	109	89	. 1	0574		100	0		900			
ITEM REFERENCE		DBSCR:	PPTON	****		PALUQ	TTY	DR	awing	NO	ITEM	REFERENCE	
2BMBR0000042		PACKE	R SBE QCA	D700		2			02/53		2	2BMBR0000042	~ ~ ~ ~ ~ ~ ~ ~
2BMBR0000043		HP_CYI 5/16":	LINDER IN -18 UNC-2	TERPACE A SKT HD (iap scr	2		K2	02/53	96G01	. 3	 2BMBR0000043	

IF21432A53 HP CYLINDER INTERPACE TRANSVERSE PACKER B202/5396G01 2BMBR0000044 ZEMER0000044 A transfer of the second secon D297/1418P0T HP CYLINDER INTERFACE 5/16*-18 UNC-2A SRT HD CAP SCR B202/5396G01 IP2143ZA54 2BMBR0000045 5 2BMBR0000045 RW HP CYLINDER INTERFACE 2 PACKER B202/5396G01 2BMBR0000050 10 ZBMBR0000050 D297/1420P01 HP_CYLINDER_INTERPACE CRUSHING PEG 2BMBR0000051 8 B202/5396G01 11 2BMBR0000051 D297/1093P03 HP CYLINDER INTERFACE 3/4"-16UNC-2A SPECIAL SCREW 8 2BMBR0000052 B202/5396G01 12 2BMBR0000052 D297/1398P01

PACKING SPECIFICATION FOR EWN R6074

CONTRACT: CUSTOMER REP:

INTERMOUNTAIN PO NO 100318 - OG \ CUST. ORDER 314870 INTERMOUNTAIN UNIT 1

INSP RELEASE: 020, 021, 022, 024, 025, 026, 027

SUPPLIED TO:

INTERMOUNTAIN POWER SERVICES CORP. 850 WEST ERUSE WELLMAN RD. DELTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLAMS WORKS DEWBOLD ROAD

CONTACT:	MR.G.HIRON	īs	TEL	01788 531053	SHEET 5 OF 7	DATE :14/01/20	003		
CASE	length) IMENSIONS WIDTE	HRIGHL (cm)	CAPACITY CUBIC (m)	GROSS	WEIGHT (kg) NET			:
3273C	109	109	89	1.0574	1000	900	# TO TO THE THE TO SEE THE THE THE THE THE		
ITEM REFERENCE		DESCR	IPTION		QUANTITY	DRAWING NO	ITEM	REFERENCE	
2BMBR0000053		PACKEI	₹ .		2	B202/5396G01 D297/1421P01	13	2BMBR0000053	P 1004 400 491 (201
204000000000			LINDER INT	ERFACE		#202/5396G01	1.4	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	

2EMBR0000053	PALASK	&	D297/1421P01	1.3	2BMBR0000053
2BMBR0000054	HP CYLINDER INTERFACE COVER PLATE	4	B202/5396G01 D297/1422P01	14	2BMBR0000054
2EMBR0000055	HP CYLINDER INTERPACE BOLT 1/2" X 13UNC X 1.1/2"LG	8	B202/5396G01 IF20004A10	15 .	2EMBR9000055
2EMBR0000056	HP CYLINDER INTERFACE PACKER	4 July State of the State of th		.16	- 2BMBR0000056
2BMBR0000057	HP CYLINDER INTERFACE PACKER	4	E202/5396G01 D297/1295P02	17	25MBR0000057
. 2BMBR0000058	HP CYLINDER INTERPACE	en some of a destroyment to the second destroyment of the second of the second destroyment of th	E202/5396G01 D297/1049P05	18	2BMBR0000058
2BMBR0000059	HP CYLINDER INTERPACE DOMEL	8	B202/5396G01 D297/1121P01	19	2BMBR0000059
	HP CYLINDER INTERFACE		முறு மு∢தன் அவை கொளி பூ க்		

PACKING SPECIFICATION FOR EWN R6074

CONTRACT:

INTERMOUNTAIN

CONTRACT NO: CUSTOMER REF:

PO NO 100318 - OG \ CUST. ORDER 314870 INTERMOUNTAIN UNIT 1

INSP RELEASE: 020, 021, 022, 024, 025, 026, 027

E202/5396G01

B202/5396G01

D298/1098P14

IP21506AB

26

27

2BMBR0000065

2BMBR0000066

SUPPLIED TO:

2BMBR0000065

2EMBR0000066

INTERMOUNTAIN POWER SERVICES CORP.

1/4" UNC HEX SOC SET SCREW

HP CYLINDER INTERFACE

HP CYLINDER INTERPACE

TAB WASHER

850 WEST BRUSH WELLMAN RD.

DELTA

UTAH 84624. USA

PACKED AT : ALSTOM POWER UK LTD. WILLARS WORKS

NEWBOLD ROAD

	OTMI OFOTEN	CATTLE.				•			
CONTACT:	MR.G.EIRONS		TEL	01788 531053	SHEET 6 OF 7	DATE :14/01/2003			
CASB	D) LENGTH	MIDTH MENSIONS	(cm) HBIGHT	CAPACITY CUBIC (m)	WE GROSS	IGHT (kg) NET		郵 等・等・番・巻 雑 郷 郷 郷 郡 郡 郡 む な な な な な な な な な な な な な な な な	
3273C	109	109	89	1.0574	1000	900	. was any sale and was and the fift with the	[₹] [₹] [₹] [‡]	
ITEM REFERENCE		DESCR:	EPTION		QUAWFITY	DRAWING NO	TTEM	REFERENCE	
2BMBR0000060			ASION KRA		5	E202/5396G01 D297/1064P01	20	2BMBR0000060	
2BMBR0000061		skt h		W 1*-8UNC-2A	10	B202/5396G01 D297/1409P01	22	2BMBR0000061	vaq
2EMBR0000062	-	PLUG PLUG	LINDER INT	ERFACE .	10	B202/5396G01 D297/1406F01	. 23	2BMBR0000062	;
2EMBR0000063_	يره ير محمدر مايو مد		LINDER INT 1/2 DIA	ERFACE		R202/5396G01 D297/1159P08	. 24	2BMBR0000063	· dwee
2BMBR0000064		HP CY	LINDER INT	ERFACE	4	E202/5396G01 D297/1407P01	25	2EMBR0000064	•
		HP CY	LINDER_INT	ERPACE	i samilikka samilikkandrid dak endiriskenya-efed hedikkeis.	WWS (ARVIEUL			

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PACKING SPECIFICATION FOR ENN R6074

CONTRACT:

CONTRACT NO:

INTERMOUSTAIN
PO NO 100318 - OG \ CUST. ORDER 314870
INTERMOUNTAIN UNIT 1

CUSTOMER REF:

INSP RELEASE: 020,021,022,024,025,026,027

E202/5396G01

D297/1177P01

SUPPLIED TO:

2BMBROQDOO70

2BMBR0000073

INTERMOUNTAIN POWER SERVICES CORP.

850 WEST BRUSH WELLMAN RD.

DRLTA

UTAH 84624, USA

PACKED AT : ALSTOM POWER UK LTD.

WILLAMS WORKS

NEWBOLD ROAD

CONTACT:	MR.G.HIROWS		TEL	01788 531053	SHEET 7 OF 7	DATE :14/01/20	003		
	Length D	MIDIH IMENSIONS	HBIGHT (Cm)	CAPACITY CUBIC (m)	GROSS GROSS	SIGHT (kg) NET		· · · · · · · · · · · · · · · · · · ·	1 30 10 10 10 10 10 10 10 10 10 10 10 10 10
3273C	109	109	89	1.0574	1000	900	يت جن وي شود الله الله الله الله الله الله الله الل	on the war then the wife and the day to the top the the day the the top	****
ITHM REFERENCE		DESCR	IPTION :		QUANTITY	DRAWING NO	ITEM	REFERENCE	
2BMBR0000068		COMB	extension		2	B202/5396G01 D297/1455P01	. 21	2BMBR0000068	

HP CYLINDER INTERFACE JACKING SCREW 1/2"-13UNC-2A HP SHAFT GLAND ASSEMBLY - CENTRE

PUBSING BLOCK (SPEC. PS31/103)

HP CYLINDER INTERFACE

B212/3856G01 D297/1089P05

0175

ALSTOM Power Ltd

RUGBY WORKS

Lloyds Approved to ISO 90012000
This is to certify that all the items in the stipment detailed above have been subject to our inspection for adherence to the requirements of the Contract Document and/or Subsequent aneximents and to the relevant design requirements and/or codes of practice

2BMBR0000070

2BMBR0000073